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Small Arms Training

Volume 1, Pamphlet No. 7

•303-inch Machine Gun

PART IIA—TRAINING

Infantry (Limber) and Horsed Cavalry

AUSTRALIA

1939

(Reprinted with the permission of the Controller, His Majesty's Stationery Office, London.)

By Authority: D. W. PATERSON CO. PTY. LTD., 495 Collins St., Melbourne, C.1

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(Notified in A.A.Os. dated 31st October, 1939.)

SMALL ARMS TRAINING, VOLUME I, PAMPHLET No.7.
.303-INCH MACHINE GUN, PART IIA - TRAINING.

Infantry (Limber) and Horsed Cavalry
Australia, 1939.

AMENDMENT No.1.

To be fixed inside the front cover of the pamphlet.
Wherever the words "emergency gun drill" occur, read in lieu "elementary gun drill".

By Command of the Military Board.

C.B. Laffan

Secretary to the Board.

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the Military Board.

Amendments will be published in Australian Army Orders.

Secretary to the Board.

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CONTENTS

	Page
General	7
Organisation, Establishments, Drill Duties	8
Definitions	10
Section 11. Elementary Gun Drill	12
Lesson 45. Take Post	13
,, 46. Mount and Dismount Gun	14
,, 47. Load and Unload	20
,, 48. Action and Cease Firing	21
,, 49. Clear Gun and Stand Clear	21
,, 50. To adjust sights and lay the gun	21
,, 51. Fire, Stop and Go On	22
,, 52. Consistency of Tap and adjustment of clamp	22
,, 53. Traversing	24
,, 54. Swinging Traverse	24
,, 55. Controlled Corrections—Direct	25
,, 56. Controlled Corrections—Indirect	25
Section 12. Tests of Elementary Gun Drill and Instruments	27
Section 13. Signals	32
Section 14. Advanced Machine Gun Handling	33
Lesson 57. Man-handling of loads	33
,, 58. Mounting the gun on exposed ground	34
,, 59. Mounting the gun on uneven ground	38
,, 60. Bringing the gun into action as part of a section, making use of cover	39
Section 15. Vehicles and Transport	41
Lesson 61. Packing of Infantry Limber (or Cavalry Pack)	41
Section 16. Visual Training	57
Lesson 62. Indication and Recognition (without aids)	59
,, 63. Indication and Recognition (with aids)	59
,, 64. Direct fire orders for gun numbers	63
Judging Distance Test	63
Section 17. Section Drill.—Direct Fire	64
Lesson 65. Prepare for Action and Come into Action	64
,, 66. Cease Firing and On Limber	68
,, 67. Long Carry	70
,, 68. Fire Discipline	70
,, 69. The replacement of breakages	70
,, 70. To continue firing in the event of the target becoming obscured	71
,, 71. To make preparations in daylight to continue firing in darkness	73
,, 72. To change from night firing to direct fire	74

Section 18. Platoon Drill.—Indirect	76
Lesson 73. Prepare for Action	76
„ 74. To Come into Action	77
„ 75. Director method	78
„ 76. Post method	79
„ 77. Combination of D.A.P. and Posts	81
„ 78. T.O.G. method	82
„ 79. To place the necessary elevation on the guns	82
„ 80. Distribution and Corrections	83
„ 81. To engage a new target	85
„ 82. Fire control charts	86
„ 83. Cease Firing and On Limber	87
Section 19. Section Drill.—Night Firing	88
Lesson 84. Prepare for Action and Come into Action	88
„ 85. To obtain direction and elevation	90
„ 86. Fire control charts	92
„ 87. To Cease Firing and On Limber	92
Section 20. Observation of fire and ranging.—	
General	93
Lesson 88. Observation of fire	94
„ 89. Observation of fire and ranging	95
Section 21. Headquarters training	97
Section 22. Field Duties.—	
Introductory	99
Method of instruction	104
Lesson 90. Occupation of a position—Day	105
„ 91. Modifications for indirect fire	109
„ 92. Occupation of a position—Night	111
„ 93. Duties special to defence	112
„ 94. Duties special to withdrawal	114
Appendix I. Spotlight apparatus for training M.G. personnel	118
Appendix II. Packsaddlery	120
Appendix III. Infantry Machine Gun Pack	129

GENERAL

Small Arms Training, Vol. I, Pamphlet No. 7, Part II (A), deals in general with the handling of the gun. It aims at training gun numbers in drill, and the application of drill to ground, thus fitting a man to take his place as a member of a machine gun team in battle.

It further aims at training headquarters of platoons (troops) and sections in their duties in the field.

The drills are arranged to meet the average conditions of mobile warfare. Latitude must be exercised in their application. For example, in an extensive programme shoot Nos. 2 may require assistance.

These drills are generally appropriate to cavalry. The duties given for the infantry are applicable to equivalent ranks in the cavalry. Where the same statement cannot apply to both infantry and cavalry, necessary additional paras. are added to deal with the cavalry aspect.

NOTE.—Additional paras. have been included in this Pamphlet to cater for the possible future introduction of the M.G. Dial Sight.

These paras. are marked with a black vertical line on the margin.

They will be disregarded until such time as the Dial Sight is issued in Australia.

ORGANISATION

Infantry.

Each Support company of an Infantry Battalion (Australia) is divided into platoons; platoons into two sections and sections into two sub-sections.

Machine gun platoons will be numbered consecutively with the rifle platoons from No. 1 throughout the battalion with the addition of (M.G.).

Machine gun sections will be numbered from 1 throughout the company.

Sub-sections will be numbered from 1 to 4 in each platoon. (This does not alter the principle of numbering guns in action, from the right.)

Each machine gun platoon is commanded by a Subaltern, with a Platoon Sergeant as second-in-command.

Each machine gun section is commanded by a Sergeant or a Corporal, known as the Section Commander and Section Corporal respectively. A section comprises a section headquarters and two sub-sections, the headquarter personnel comprising, in addition to the N.C.O.'s mentioned, of a Rangetaker and an Orderly.

Sub-sections consist of the gun numbers detailed for the service of one gun.

The guns and equipment of each section are self-contained in one four-horsed G.S. limbered wagon, which carries two machine guns and equipment and the first supply of ammunition.

Each machine gun platoon has a two-horsed G.S. limbered wagon carrying reserve S.A.A.

The machine gun platoon is a tactical as well as a fire unit; the section is a fire unit only and not a tactical unit.

Cavalry.

The Machine Gun Troop forms part of a Light Horse Regiment (Australia). It consists of a Troop headquarters and two Sections, each of two sub-sections.

The Troop is commanded by a Subaltern with a Troop Sergeant as second-in-command. A second Sergeant is provided in War Establishments. A second Subaltern is allotted in Peace Establishments.

Machine gun sections will be numbered 1 and 2 in the Troop and sub-sections 1 to 4. (This does not alter the principle of numbering guns in action, from the right.)

Each machine gun section is commanded by a Corporal with another Corporal as second-in-command, known as the Section Leader and Section Corporal respectively. A section comprises a section headquarters and two sub-sections, the headquarter personnel comprising, in addition to the N.C.O.'s mentioned, of a Rangetaker and an Orderly.

Sub-sections consist of the gun numbers detailed for the service of one gun.

The guns and equipment for direct fire are carried on pack horses. Reserve ammunition being carried on a 30-cwt. lorry.

The troop is the tactical unit. The section is the fire unit.

ORGANISATION AND ESTABLISHMENTS

Infantry Machine Gun Platoon

WAR (37) Platoon H.Q.

- 1 Subaltern (mounted)
- 1 Sergeant
- 1 Orderly (mounted)
- 1 Observer
- 4 Scouts
- 1 Batman-Groom

Two Sections (each)

- 1 Sergeant†
- 1 Corporal†
- 1 Rangetaker
- 1 Orderly
- 10 Gun numbers
- 1 L.G.S. Wagon

PEACE (30) Platoon H.Q.

- 1 Subaltern (mounted)
- 1 Sergeant
- 1 Orderly (mounted)
- 1 Observer
- 2 Scouts

Two Sections (each)

- 1 Sergeant
- 1 Corporal
- 1 Rangetaker
- 1 Orderly
- 8 Gun numbers
- 1 L.G.S. Wagon

NOTE.—†In one Section only, the other Section having two Corporals.

Light Horse Machine Gun Troop

WAR (55) Troop H.Q.

- 1 Subaltern
- 2 Sergeants
- 2 Farriers
- 1 Batman
- 1 Groom
- 1 Orderly
- 4 Scouts
- 2 Anti-tank rifle numbers.

Two Sections (each)

- 1 Section Leader
- 1 Section Corporal
- 1 Rangetaker
- 1 Orderly
- 1 Horseholder*
- 16 Troopers

PEACE (40) Troop H.Q.

- 2 Subalterns
- 1 Sergeant
- 2 Orderlies (1 Mess)

Two Sections (each)

- 1 Section Leader
- 1 Section Corporal
- 1 Rangetaker
- 1 Orderly
- 1 Horseholder*
- 12 Troopers†

NOTES.—*Holds the horses of Section Leader, Rangetaker and Orderly.

†In addition, a No. 7 is provided in No. 2 sub-section.

Horses

Troop Leader (two)	..	2
Remainder (one each)		54
Pack Horses	...	12
Total	...	68

Horses

Troop Leader	..	1
Remainder (one each)	..	39
Pack Horses	...	8
Total	...	40

DRILL DUTIES

Sub-Section Personnel

Infantry.

Nos. 1, 2 and 3 are gun numbers.

Nos. 4 and 5 assist with ammunition and stores and form, with Nos. 3, the chain of supply from the limber to the guns. One No. 5 will function as a Brakesman during movement of the limber.

Whenever Nos. 5 are not available, e.g., Peace Establishment, the Nos. 4 will combine the duties of both numbers.

Cavalry.

Nos. 1, 2 and 3 are gun numbers.

Nos. 4 assist with ammunition and stores and form, with Nos. 3, the chain of supply from the led horses to the guns.

Nos. 5 are the leaders of the Gun Packs. In addition, they act as horseholders for Nos. 1 and 2.

Nos. 6 are the leaders of the 1st Ammunition Packs. In addition, they act as horseholders for Nos. 3 and 4. In Peace, No. 6 of the even-numbered sub-section will hold the horse of the Section Corporal.

Nos. 7 (War Establishment) are the leaders of the 2nd Ammunition Packs. In addition, No. 7 of the even-numbered sub-section will act as horseholder for the Section Corporal.

In Peace Establishment a No. 7 is only provided with No. 2 sub-section. He will be regarded as a spare number, functioning as a Scout or on the chain of supply as required.

Nos. 8 (War Establishment) are available as spare numbers, being used as Scouts or on the chain of supply as required. Whenever they are dismounted their horses will be held by the Nos. 7 of the odd-numbered sub-sections.

Other Personnel

The drill duties of all personnel are clearly outlined in the various lessons and exercises dealt with in this manual.

DEFINITIONS

(See also S.A.T., Vol. I, Pamphlet No. 7, Part III.)

Arc of Fire.—Arc over which it is desired that the guns can bear from a given gun position. Its boundaries are described as "right of arc" and "left of arc."

Auxiliary Aiming Mark.—A point off the target indicated by the fire controller (or located by the firer after a correction has been ordered in taps), used as an aiming mark in order to obtain fire effect.

Deflection.—A lateral displacement of the lines of any or all guns.

Direct Fire.—When the gun is laid directly on the target by means of the backsight and foresight.

Fire Control.—The necessary arrangements and orders for hitting the target.

Fire Controller.—The individual responsible for giving the orders for the engagement of a target to the men of a fire unit.

Fire Direction.—The term applied to instructions given by the commander of more than one fire unit to the fire unit commanders as to how their fire is to be applied.

Gun Aiming Mark.—A suitable mark on the line gun-target, selected by the firer by adjustment of the tangent sight slide, to enable him to maintain fire effect whilst the target is temporarily obscured.

In Action.—A machine gun is said to be in action when it is mounted with reference to its arc of fire (or direction indicated) and the necessary men, equipment and ammunition are present at the gun to enable fire to be opened when ordered.

Indirect Fire.—When the gun is laid to hit a given target by other means than by laying on it direct.

Laying.—The process of elevating (or depressing) and traversing a gun until its axis is made to point in any given direction. On conclusion of this process the gun is said to be laid.

Line.—The direction in which a gun or guns are pointed.

Near Limit of Arc.—The near edge of the zone on which fire is required.

Observed Fire.—When the effect of the fire can be observed from the gun or from the fire controller's observation post.

Observation Post.—A post from which a particular area can be kept under observation or from which artillery and machine gun fire can be controlled and corrected.

Pivot Gun.—The gun used as a basis for calculation.

Position in Readiness.—The position at which the guns are taken off the vehicle or pack animals preparatory to coming into action. It will normally be the nearest point to the gun positions to which the vehicle or pack animals can be brought.

Registering.—The recording of the direction and elevation necessary to hit any given target as found by ranging.

Rendezvous.—A pre-arranged place of assembly (R.V.).

Zero Line.—A line of reference, on which all guns are parallel, and from which switches are measured.

SAFETY PRECAUTIONS.

On all occasions when the gun and drill cartridges are used for instructional purposes, the instructor will carry out the following safety precautions:—

- i. Inspect all D.P. locks to ensure that the striker does not protrude through the firing pin hole.
- ii. Inspect all ammunition to ensure that all cartridges are of the drill type.

NOTE.—When instruction is being given in mechanical subjects, D.P. stores, if available, will always be used.

SECTION 11.—ELEMENTARY GUN DRILL

1. During elementary gun drill the gun will be mounted to suit the sitting position, but emphasis will be laid on the fact that, on active service, the tripod will always be adjusted to suit the ground and available cover.

2. The object of elementary gun drill is to render the man proficient in the duties of gun numbers in handling the weapon.

3. It aims at teaching the man:—

- i. To mount and dismount the gun.
- ii. To load and unload the gun.
- iii. To bring the gun into action.
- iv. To cease firing.
- v. To adjust the sights and lay the gun.
- vi. To fire the gun, to stop firing and to go on firing.
- vii. Consistency of tap and adjustment of clamp, traversing and the swinging traverse.
- viii. Controlled corrections, direct and indirect fire.

Instructor's Notes

Methods of carrying out the drill.

1. The stores required vary according to the portion of the drill which is being carried out, but for all drills the squad requires a gun, tripod, spare parts case complete, condenser can and dummy tube, and two belt boxes with belts and drill cartridges. When additional stores are required, details are given in the instructional notes. The dummy condenser tube will consist of a 6 ft. length of rope with both ends bound with wire and with a steel wire hook at one end for attachment to the securing chain of the cork plug.

2. Laying out the stores.—Before the squad falls in, the gun and tripod will be placed in line on the ground a few paces apart, tripod on the left with the legs to the rear: the muzzle of the gun pointing to the front, the dummy condenser tube attached and the spare parts case close to and on the right of the gun. The belt boxes and condenser can will be placed about a pace apart with the condenser can on the right, a few paces in rear of the gun and tripod.

3. Falling in.—The squad is fallen in, in single rank. The instructor details any three men to form the detachment. He falls them in a short distance in rear of the stores and numbers them off. The remainder of the squad under instruction is placed in such a position that the maximum benefit is derived although they themselves are not at the moment acting as Nos. 1, 2 or 3. If at any time the instructor wishes to change round Nos. 1, 2 and 3, he should order "Fall out 1." No. 1 becomes No. 3, No. 2 becomes No. 1 and No. 3 becomes No. 2, the detachment re-numbering at once, the instructor detailing three fresh numbers to take their place when he wishes to do so.

4. The instructor must see that the standard of drill is maintained throughout, that the numbers remain still and correctly placed on the completion of any necessary movement, particularly in the sitting or lying positions.

When the instructor wishes to explain, criticise or demonstrate, he will first order "Rest" to allow of relaxation of the muscles. Before the drill is resumed he will ensure that the numbers adopt the correct position, alert and ready for any order. This will be effected by the order "Position."

So far as is possible, the duties of No. 1 will first be taught, and practised by the whole squad. The instructor will then teach and practise the duties of Nos. 2 and 3 in that order, before drilling the detachment collectively.

5. The orders given by the instructor are given in inverted commas at the head of each paragraph. All orders will be given verbally.

LESSON 45.—TAKE POST

"Take Post."

The detachment will turn to the right, with the exception of No. 1.

No. 1 (Infantry).

No. 1 doubles forward and lies down on the left of the tripod. He inspects the tripod to see that the elevating and crosshead joint pins are properly in position and turned down, both elevating screws equally exposed, traversing clamp sufficiently tight to prevent the crosshead from swinging round when the tripod is carried, the crosshead over the rear leg, direction dial secure and all three legs together and clamped securely.

When Nos. 2 and 3 have reported to him, he reports "ALL CORRECT" (or otherwise) to the instructor.

No. 1 (Cavalry).

No. 1 doubles forward and lies down on the left of the tripod. He inspects the tripod for condition, ensures that the tripod legs are clamped tight, all three legs together. He ensures that the direction dial is secure and that the traversing clamp is loosened to the full extent.

When Nos. 2 and 3 have reported to him, he reports "ALL CORRECT" (or otherwise) to the instructor.

No. 2 (Infantry).

No. 2 doubles forward and lies down on the right side of the gun. He places the strap of the spare parts case on his right shoulder and inspects the gun to see that the muzzle attachment is correctly adjusted and the dummy condenser tube fitted, the feed block is in the gun and the front cover locked, the sliding shutter is closed, the tangent sight set at 600, the lock is in the gun and the "T" fixing pin is screwed home and vertical.

He reports "GUN CORRECT" (or otherwise) to No. 1.

No. 2 (Cavalry).

No. 2 doubles forward and lies down on the right side of the gun. He places the strap of the spare parts case on his right shoulder and inspects the gun to see that the muzzle attachment is correctly adjusted and the dummy condenser tube fitted, that the feed block is in the gun and the front cover locked, that the sliding shutter is closed, the tangent sight set at 600, the lock is in the gun and the "T" fixing pin is home and vertical. He will close the elevating gear up and ensure that the joint pins are properly in position with the crosshead joint pin turned up.

He reports "GUN CORRECT" (or otherwise) to No. 1.

No. 3.

No. 3 doubles forward and lies down between the condenser can and belt boxes.

He inspects the belt boxes to see that rounds are in the front of the belts and pointing the right way. He closes and fastens the boxes. He inspects the condenser can to see that the cap is screwed in position and that the filler is secure.

He reports "AMMUNITION AND CONDENSER CAN CORRECT" (or otherwise) to No. 1.

All numbers will now lie facing forward with their arms folded.

NOTE.—When the ground is too wet, the detachment should be instructed to kneel instead of lying down, but waterproof sheets should be used to avoid this when possible.

LESSON 46.—MOUNT AND DISMOUNT GUN.*Instructor's Notes*

The Instructor will indicate to No. 1 the spot over which the socket is to be mounted and the direction in which the gun will point. This spot should be a few yards in front of No. 1.

The action of No. 1 in mounting and dismounting the tripod will be taught first, ending and beginning respectively at the point where No. 1 is seated behind the tripod and has withdrawn the joint pins. Cavalry—No. 1 seated behind the tripod.

The duties of Nos. 2 and 3 will then be taught in that order, the additional duties of No. 1 being explained but not demonstrated.

"Mount Gun."**No. 1 (Infantry).**

No. 1 jumps to his feet, picks up the tripod and doubles forward with it, placing it on the ground with the socket on the spot indicated. Standing astride the legs, he loosens both jamming handles simultaneously, grasps the crosshead bracket as far forward as possible with both hands, and with a forward and upward movement, erects the tripod (Plate 6).

Supporting the tripod with the left hand at the crosshead

bracket, the left forearm resting on the thigh, he ensures that the rear leg is on the ground and the socket upright over the spot indicated and tightens up both jamming handles with the right hand if possible. After putting a final pressure with each hand on the jamming handles, he sits down behind the tripod, removing the elevating and crosshead joint pins.

As soon as No. 2 places the gun on the tripod No. 1 hands him the crosshead joint pin and grasps the left traversing handle with the left hand. When No. 2 has inserted the crosshead joint pin, No. 1 will insert the elevating joint pin and turn the handle down. He levels the gun by means of the elevating wheel and tests by tapping the traversing handles to see if the traversing clamp is "sticky," tightening it if necessary and sits, looking straight in front of him, with his elbows supported by the inside of his thighs, his third and little fingers round the traversing handles, forefingers on top, second fingers underneath the safety catch and thumbs resting lightly on the thumb-piece.

No. 1 (Cavalry).

No. 1 jumps to his feet, picks up the tripod and doubles forward with it, placing it on the ground with the socket on the spot indicated. Standing astride the legs, he loosens both jamming handles simultaneously, grasps the socket with both hands, thumbs inside the socket and, with a forward and upward movement, erects the tripod and sits down in rear of it.

As soon as No. 2 has placed the pivot into the socket, No. 1 will level the gun, open the sliding shutter and test by tapping the traversing handles to see if the traversing clamp is "sticky," tightening it if necessary and sits, looking straight in front of him, with his elbows supported by the inside of his thighs, his third and little fingers round the traversing handles, forefingers on top, second fingers underneath the safety catch and thumbs resting lightly on the thumb-piece.

No. 2 (Infantry).

No. 2 opens the sliding shutter, and, picking up the gun with his left hand grasping the right traversing handle and his right arm over the barrel casing, doubles forward to the right side of the tripod, arriving about the time No. 1 is removing the pins.

He sinks on the left knee, places the gun on the tripod, supporting the barrel casing with his right thigh and with his right hand drives in the crosshead joint pin which No. 1 has handed to him, finally turning the handle down (Plate 7). He retains his hold with his left hand on the right traversing handle until the pin is home.

No. 2 lies down on the right of the gun, looking towards the gun, his head in line with, but below, the level of the feed block. When No. 3 has brought up the belt boxes and condenser can, No. 2 places the former in line with the feed block and inserts the dummy condenser tube into the latter.

PLATE 6
ERECTING THE TRIPOD (INFANTRY)

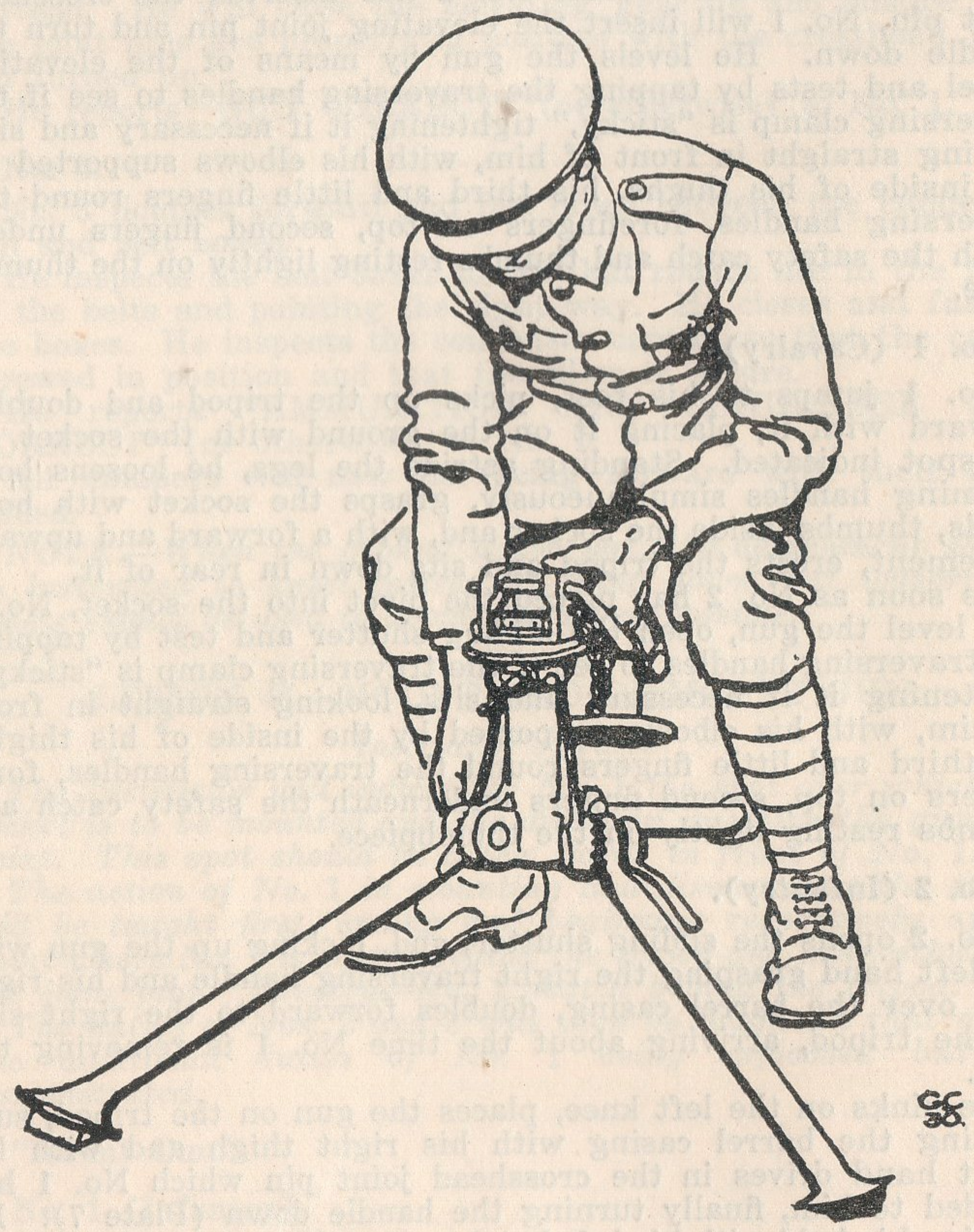


PLATE 7
MOUNTING THE GUN (INFANTRY)

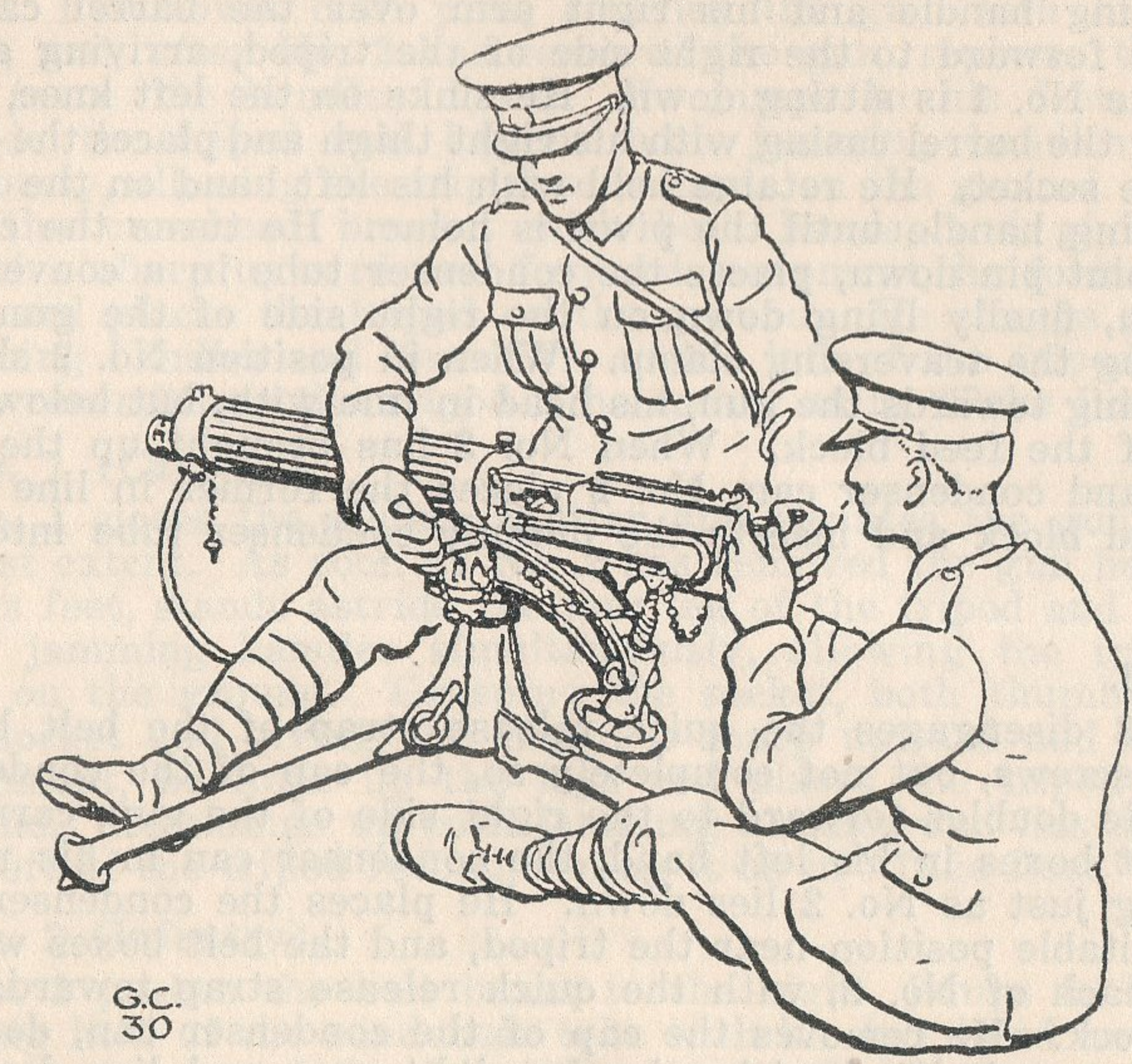
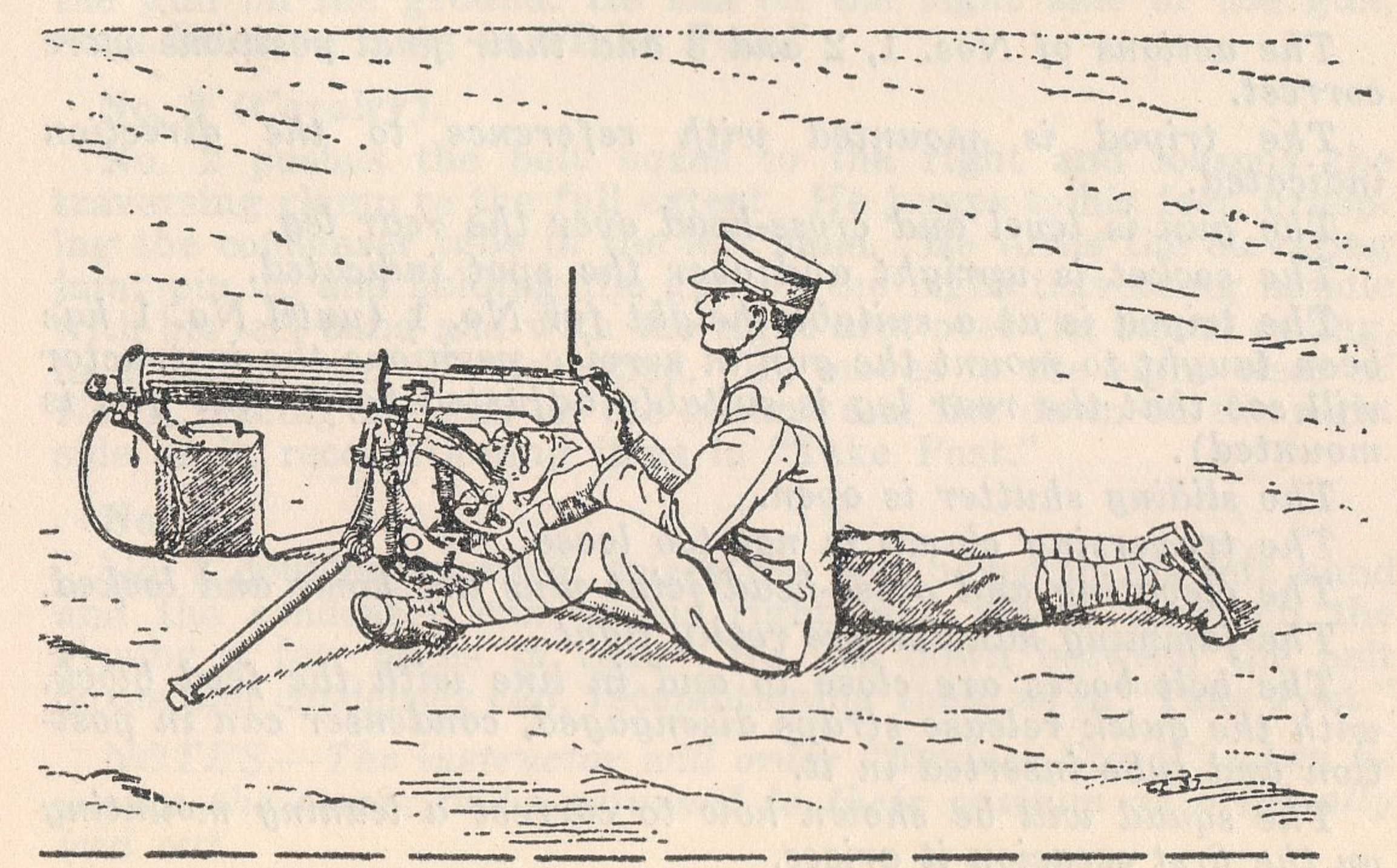


PLATE 8
FIRING POSITION—SITTING



No. 2 (Cavalry).

No. 2, picking up the gun with his left hand grasping the right traversing handle and his right arm over the barrel casing, doubles forward to the right side of the tripod, arriving about the time No. 1 is sitting down. He sinks on the left knee, supporting the barrel casing with his right thigh and places the pivot into the socket. He retains hold with his left hand on the right traversing handle until the pivot is home. He turns the cross-head joint pin down, places the condenser tube in a convenient position, finally lying down on the right side of the gun and clamping the traversing clamp. When in position No. 2 should be looking towards the gun, his head in line with, but below, the level of the feed block. When No. 3 has brought up the belt boxes and condenser can, No. 2 places the former in line with the feed block and inserts the dummy condenser tube into the latter.

No. 3.

No. 3 disengages the quick release strap of the belt boxes and unscrews, but not completely so, the cap of the condenser can. He doubles forward to the right side of the gun, carrying the belt boxes in his left hand, the condenser can in his right, arriving just as No. 2 lies down. He places the condenser can in a suitable position near the tripod, and the belt boxes within easy reach of No. 2, with the quick release strap towards the feed block. He removes the cap of the condenser can, doubles back to a suitable position in the right rear and lies down.

Note.—When the gun has been mounted and Nos. 1, 2 and 3 are in position, the instructor should remark whether:—

The actions of Nos. 1, 2 and 3 and their final positions were correct.

The tripod is mounted with reference to the direction indicated.

The gun is level and cross-head over the rear leg.

The socket is upright and over the spot indicated.

The tripod is at a suitable height for No. 1 (until No. 1 has been taught to mount the gun in service positions the instructor will see that the rear leg is suitably adjusted before the gun is mounted).

The sliding shutter is open.

The traversing clamp is not too loose.

The elevating and cross-head joint pins are home and locked.

The jamming handles are really tight.

The belt boxes are close to and in line with the feed block, with the quick release straps disengaged, condenser can in position and tube inserted in it.

The squad will be shown how to correct a leaning mounting on the first occasion it arises.

"Dismount gun."**No. 1 (Infantry).**

No. 1 removes both pins, steadies the gun with his right hand, and, after No. 2 has removed the gun, replaces the pins and turns the handles down. He jumps to his feet, stands astride the tripod and loosens both jamming handles simultaneously, allowing the tripod to collapse on the ground. Grasping the crosshead bracket with both hands, and giving the tripod a sharp upward and forward movement, he folds up the legs and places the tripod on the ground. He clamps up both jamming handles and lies down on the left of the tripod.

He reconditions the tripod if necessary as in "Take Post."

No. 1 (Cavalry).

No. 1 closes the sliding shutter and elevates the gun to the fullest extent. As soon as No. 2 has removed the gun he jumps to his feet, stands astride the rear leg of the tripod and loosens both jamming handles simultaneously, allowing the tripod to sink on the ground. Grasping the socket, both thumbs inside the socket and giving the tripod a sharp upward and forward movement, he folds up the legs and places the tripod on the ground. He clamps up both jamming handles and lies down on the left of the tripod reconditioning it as in "Take Post."

No. 2 (Infantry).

No. 2 pushes the belt boxes to the right, jumps to his feet seizing hold of the condenser tube with his left hand and, after No. 1 has removed the joint pins No. 2 will lift the gun off the tripod, holding the right traversing handle with the left hand and with the right hand over the barrel casing. He moves to the right clear of No. 1, closes the sliding shutter and places the gun on the ground. He lies on the right side of the gun, reconditioning it as in "Take Post."

No. 2 (Cavalry).

No. 2 pushes the belt boxes to the right and loosens the traversing clamp to the full extent. He jumps to his feet, grasping the condenser tube in the left hand. He turns the elevating joint pin up and holding the gun by the right traversing handle with his left hand and with the right arm over the barrel casing, he lifts the gun off the tripod. He moves to the right clear of No. 1, placing the gun on the ground and lies down on the right side of it, reconditioning it as in "Take Post."

No. 3.

No. 3 doubles forward, seizes the belt boxes in his left hand and the condenser can in his right, and places them on the ground a few paces in rear. He lies down between the belt boxes and condenser can, reconditioning them as in "Take Post."

NOTES.—The instructor will order "Replace Stores" when he wishes the stores to be returned to their position as originally laid out.

When indoor instruction is being carried out and it becomes necessary to avoid damage to the floor surface, the tripod may be dismantled in the following manner:—

Taking the weight of the tripod with the left hand, loosen both jamming handles. Using the rear leg as a lever, pull the tripod upright allowing the front legs to swing back against the rear leg. Clamp both jamming handles and place the tripod on the floor.

The above method is also of advantage when dismantling on very muddy ground, to avoid mud, etc., getting into the clutch plates.

LESSON 47.—LOAD AND UNLOAD

“Load.”

No. 1 pulls the crank handle on to the roller with the right hand, and advances his left hand to the left of the feed block, ready to grip the belt. When No. 2 has passed the tag of the belt through the feed block, No. 1 grips it and pulls the belt through the feed block as far as possible. He must pull the belt gently and straight when doing so. He releases the crank handle and repeats the above movements. Whilst pulling the crank handle on to the roller the belt will be held but not pulled with the left hand.

No. 2, holding the belt box with the left hand, throws the lid completely open with the right and seizing the end of the belt with the right hand at the point where the tag joins the fabric, forefinger along the tag, pushes the tag through the feed block as far as possible. He must ensure that the belt is not twisted on entering the feed block.

NOTES.—Emphasise that the belt must be pulled gently and straight through the feed block. The men must avoid the natural tendency to pull it to the rear, i.e., towards No. 1, which might prevent the round being fed correctly into the feed block.

Should any man exhibit a tendency to slur the loading motions it may be advisable to make him load “by numbers,” counting aloud whilst doing so.

The actions of Nos. 1 and 2 in loading and unloading will be taught together.

“Unload.”

If the tangent sight has been in use, No. 1 lowers it with his left hand. At the same time, without touching the belt, he pulls the crank handle on to the roller twice in succession with the right hand, allowing it to fly forward again in each case. He presses the top and bottom pawls of the feed block with his right hand, the top pawls with the fingers, and the bottom with the thumb, taking care to keep his hand clear of the entrance to the feed block.

When the belt is being withdrawn and the last round is clear of the feed block, he will press the thumbpiece.

No. 2 withdraws the belt from the feed block when No. 1 presses the pawls, steadying the belt with his left hand near the belt box and his right hand near the feed block. He packs the belt correctly in the box and closes the lid.

LESSON 48.—ACTION AND CEASE FIRING.

“Action.”

Nos. 1, 2 and 3 perform the duties learnt in “Mount Gun” and “Load,” the gun being loaded as soon as it is correctly mounted (Plate 8).

“Cease Firing.”

Nos. 1, 2 and 3 perform the duties learnt in “Unload” and “Dismount Gun,” the gun being dismounted as soon as it has been unloaded correctly.

LESSON 49.—CLEAR GUN AND STAND CLEAR.

“Clear Gun.”

No. 1 pulls the crank handle on to the roller, raises the rear cover, removes the lock from the lock guides, and eases the crank handle forward, allowing the lock to rest against the hinge of the rear cover, and resumes his holding.

He reports “GUN CLEAR.”

NOTE.—If it is desired to replace the lock in the gun and close the rear cover, but not to load the gun, the command “Lock in—cover down” may be used. If the gun is loaded, “Clear Gun” will be preceded by “Unload.”

“Stand Clear.”

Nos. 1 and 2 jump to their feet and stand at ease in rear of the gun, No. 2 on the right. No. 3 standing at ease at his position.

NOTE.—The order “Take Post” will be used when it is desired that Nos. 1 and 2 should adopt their positions at the gun. No. 3 resuming his position.

LESSON 50.—TO ADJUST THE SIGHTS AND LAY THE GUN.

Instructor's Notes

Before the lesson is begun, instruction in aiming must have been given.

A few simple targets will be pointed out, the object being not to teach Recognition, but clean and accurate handling by the No. 1.

The instructor should order “Lay” when he wants No. 1 to do so.

If no natural aiming points are available, a landscape target may be used, being placed at any convenient distance from the gun.

The gun will be loaded before the exercise begins.

“. . . hundred (or fifty) . . . Indication . . . Lay.”

No. 1 raises the tangent sight and adjusts the slide to the range ordered. When ordered, he begins to lay the gun by tapping the gun until the correct direction is obtained, and elevating or depressing until the aim is correct. He orders No. 2 to loosen the traversing clamp when a large change in direction is necessary, and to tighten the clamp again when the gun is roughly aligned on the target.

When tapping the gun, or turning the wheel, No. 1 maintains control of the gun by keeping the disengaged hand on the traversing handle.

When the gun is laid he orders “ON” to No. 2, who raises his left hand in line with No. 1’s shoulder; at the same time No. 1 raising the safety catch with his second fingers.

Should No. 1 fail to understand an order at any time he will call “REPEAT.”

LESSON 51.—FIRE, STOP, AND GO ON.

“Fire.”

No. 1 instantly presses in the thumbpiece as far as possible by a quick and even movement of the thumbs, keeping his eyes directly on the target. He will fire in bursts, keeping the thumbpiece pressed for four or five seconds before releasing and pressing again, checking his aim between bursts. No. 2 lowers his hand.

“Stop.”

No. 1 immediately releases pressure on the thumbpiece and safety catch. He checks his aim, relaying on to the original point of aim if necessary, and calls “ON” to his No. 2.

NOTE.—The wheel should occasionally be turned while No. 1 is firing, in order to ensure correct relaying when “Stop” is ordered.

“Go On.”

No. 1 resumes the action as detailed under “Fire.”

LESSON 52.—CONSISTENCY OF TAP AND ADJUSTMENT OF CLAMP.

Instructor’s Notes

The gun will be loaded.

1. To teach a consistent tap.

The object is to develop a consistent automatic tap, in order that the line of sight is displaced the same amount each time the gun is tapped.

Each man will be practised in tapping the gun in both directions. The instructor noting the consistency. Correct holding will be taken after each tap.

NOTE.—The instructor will explain the following points:—

- i. A strong tap with a tight clamp is preferable to a weak tap with a loose clamp.
- ii. When tapping with either hand, the gun must be held correctly with the other hand, and the safety catch kept raised.
- iii. The eyes must be directed to the front, and not at the rear end of the gun or along the sights.

2. To adjust the clamp.

Instructor’s Note

Additional stores:—M.G. Target (S.A.T., Vol. V, 1931, Plate 66).

The gun will be mounted and loaded 25 yards from the target.

The object is to ascertain the degree of tightness required in the traversing clamp in order that the line of sight may be displaced 15 minutes each time the gun is tapped.

The instructor will teach how to test and adjust the clamp. He will explain to the men that the interval between bulls, at a distance of 25 yards, subtends 15 minutes. He will ensure that if the gun moves too much or too little when the men are testing the clamp, that the clamp is altered and not the tap.

Whenever the gun is mounted or a new No. 1 takes post at the gun, or after the clamp has been loosened for a big change in direction, No. 1 must test the adjustment. The instructor should point out the importance of this and also the importance of the “feel” of the correct tightness, as later on no row of bulls will be available to assist in the adjustment.

3. Combination of consistency and adjustment.

NOTE.—The instructor will explain that the object of this exercise is to test the man’s consistency of tap and adjustment of clamp and will warn No. 1 that in this particular case he will NOT check his aim or relay between bursts or on the command “Stop.”

The men will be exercised in traversing in both directions.

Progressive instruction will be given in tapping right and left on a M.G. target.

The instructor will inform the No. 1 which way he has to tap and will then give a suitable range and order to get the gun laid on to one end of a horizontal row of bulls.

When ordered, No. 1 will lay the gun on to the bullseye indicated.

On the order “FIRE,” No. 1 fires a burst, releases pressure on the thumbpiece, and strikes the traversing handle, deflecting the gun through an angle of 15 minutes. He fires another burst, taps as before, and will continue to do so, firing a burst after each tap until ordered to stop.

LESSON 53.—TRAVERSING.

Instructor's Notes

Additional stores:—M.G. Target (S.A.T., Vol. V, 1931, Plate 66).

The instructor will explain that the object of this lesson is that in traversing the firer will combine consistency of tapping with the maintenance of the line of sight on the target.

NOTE.—The instructor will warn the No. 1 in order that the accuracy of his traversing may be ascertained; he will NOT check his aim or relay on the command "Stop."

For drill in traversing the gun will be mounted and loaded 25 yards from the M.G. target.

The instructor will inform the No. 1 which way he has to traverse; and will then give a suitable range and order to get the gun laid on to one end of an oblique row of bulls.

No. 1 proceeds as in Lesson 52 (3), except that after each tap, before firing again, he relays his gun on to the target immediately above or below the point to which his tap has carried it.

LESSON 54.—SWINGING TRAVERSE.

Instructor's Note

Additional stores:—M.G. Target (S.A.T., Vol. V, 1931, Plate 66).

The instructor should explain:—

- i. That this method of traversing is only employed against linear targets at very close range, when the normal method of traversing is likely to prove too slow.*
- ii. The traversing clamp must not be so loose that No. 1 loses control of the gun, the vibration of the gun rendering it easy to swing.*
- iii. The rate of movement should be such that the line of sight is moved about one yard in two seconds, when the target is 25 yards from the gun. The movement of the gun is almost imperceptible.*
- iv. The thumbpiece should be pressed before the gun begins to move. The importance of the mounting being upright must be emphasised.*
- v. The principles of this lesson can only be explained during Elementary Gun Drill as the correct actions are only possible when the gun is firing ball ammunition.*

No. 1 loosens his traversing clamp and then lays as before on the right or left end of the target. When ordered to fire, he swings the gun slowly to the right or left, maintaining pressure on the thumbpiece throughout. He moves the gun, not by a movement of the forearms alone, but by keeping the upper part of the body fairly rigid and forcing it over in the required direction.

LESSON 55.—CONTROLLED CORRECTIONS—DIRECT.

Instructor's Notes

The gun will be loaded and fire opened before the lesson begins.

The object is to teach No. 1 to relay after altering the sights in obedience to a correction in elevation.

"Stop . . . Up (or Down) . . . Go On."

No. 1 adjusts his sights in accordance with the order, relays on to his original point of aim by turning the handwheel and continues firing.

LESSON 56.—CONTROLLED CORRECTIONS—INDIRECT.

Instructor's Notes

Additional stores:—Bar foresight, aiming post.

The gun will be mounted, the bar foresight affixed and an aiming post planted about 10 yards in front of it. The sights will be set at 2,500 yards, and the instructor will lay the gun on to the bull.

Before this lesson, No. 1 must have received instruction in the use of the graduations on the elevating handwheel and in aiming over the bar foresight. He should have an elementary knowledge of the function of the aiming post.

No. 2 must have received instruction in his position at the gun in indirect fire and in the adjustment of the bar foresight.

1. Elevation.

The object is to teach No. 1 to readjust the line of sight on to the aiming post after turning the handwheel in obedience to a correction in elevation.

"Up (or Down) . . ."

No. 1, using the graduations on the elevating wheel, elevates or depresses the gun through the angle ordered. He readjusts his line of sight on to the bull by moving his tangent sight slide up or down.

2. Direction.

The object is to teach No. 1 to readjust the line of sight on to the aiming post after the bar foresight has been altered in obedience to a correction in direction.

"Right (or Left) . . ."

No. 1 releases his hold of the traversing handles. No. 2 adjusts the bar foresight in accordance with the order received. No. 1 resumes his holding and taps the gun off until the line of sight is again on the aiming post.

Additional stores:—Dial sight and aiming post.

The gun will be mounted, dial sight attached, and an aiming post put out about 15 yards in front and to a flank. A suitable range will be set on the range drum of the dial sight and the instructor will adjust the collimator to the aiming post.

Before this lesson, No. 1 must have received instruction in the use of the graduations on the elevation drums of the dial sight. He should have an elementary knowledge of the functions of the aiming post.

1. Elevation.

The object is to teach the No. 1 to relevel the bubble after adjusting the range drum or angle of sight drum of the dial sight in obedience to a correction in elevation.

i. "Up (or Down) . . . Hundred (or Fifty)."

No. 1 adjusts the range drum as ordered, elevates or depresses the gun by turning the handwheel until the bubble is central.

ii. "Up (or Down) . . . Min."

No. 1 adjusts the angle of sight drum as ordered, elevates or depresses the gun by turning the handwheel until the bubble is central.

2. Deflection.

The object is to teach the No. 1 to relay on to the aiming post, after adjusting the deflection drum in obedience to a correction in deflection.

"Right (or Left) . . . degrees . . . minutes."

No. 1 adjusts the deflection drum as ordered, then taps the gun over until the aim is again relaid on to the aiming post. When relaid the bubble should be central if not, the No. 1 will centralise it by turning the handwheel and readjust the collimator on to the aiming post.

SECTION 12.—TESTS OF ELEMENTARY GUN DRILL AND INSTRUMENTS.

1. The following tests have been devised to assist officers in testing the efficiency of their men in elementary gun drill, and to ensure that no detail of the drill is overlooked. It is important that these tests should not be considered solely as competitions against time, for although quickness is necessary, accuracy is the first essential. No man should therefore be passed as efficient unless all the points are carried out correctly, even though he may complete them in the standard time. Whilst passing the tests for accuracy, men who slightly exceed the standard time should be tested again before being put back for further instruction.

2. The tests must be carried out in strict accordance with the detailed instructions given under the appropriate paragraphs of elementary gun drill, for unless the smallest details are insisted upon, the time limit will not be applicable. In carrying out the tests, time can be saved if the first detachment complete tests 1 to 4 consecutively, the remainder can be carried out as convenient.

3. Other ranks of machine gun units of the Permanent Military Forces will qualify annually in tests 1 to 9.

It should be noted in tests 1, 2, 3 and 4 that ALL numbers are being tested in their own particular duties as No. 1, 2 or 3, and that the tests should not be regarded as a test for the No. 1 only. Therefore a man is not considered to have passed these tests until he has passed in the duties of all numbers.

4. It is essential for each man to have passed tests 1 to 6 before proceeding with the annual M.G. course.

A record will be kept by each company commander and produced for inspection as required.

5. Method of conducting the tests.

The conditions of the test will be explained before the test begins, including the time allowed for the test, and when the time allowance begins and finishes.

NOTE.—If a stop watch is not available, a timekeeper must be appointed.

Stores required:—As for all Elementary Gun Drill in tests 1 to 8.

Words of command will be given as in the appropriate headings in Elementary Gun Drill.

Test No. 10 will be carried out by full rank N.C.O.'s only.

Name of test	Conditions before test	Number of tests	Time allowed	To pass	Remarks
(1) No. 1 Mount Gun	(2) Nos. 1, 2 and 3 will take post. Stores laid out not more than 5 yards from the place where the gun is to be mounted. Gun mounted. Belt box closed, quick release strap undone. Nos. 1 and 2—Take post. Gun mounted and loaded. Nos. 1 and 2—Take post.	(3) One	(4) 20 seconds from command "Gun" until all numbers are still.	(5) All points of E.G.D. correct.	(6)
No. 2 Load	Gun mounted. Belt box closed, quick release strap undone. Nos. 1 and 2—Take post.	One	5 seconds from command "Load" until No. 1 has got correct holding	Gun correctly loaded.	
No. 3 Unload.	Gun mounted and loaded. Nos. 1 and 2—Take post.	One	5 seconds from command "Unload" until belt box is closed.	Gun correctly unloaded.	
No. 4 Dismount Gun.	Gun mounted. Nos. 1, 2 and 3—Take post.	One	15 seconds from command "Gun" until all numbers are still.	All points of E.G.D. correct.	
No. 5 To adjust sights and lay the gun.	The gun will be loaded. 3 targets will be pointed out. Tangent sight lowered and set at 800. Nos. 1 and 2—Take post.	Three	12 seconds from the range being ordered until No. 2 holds up his hand.	Sight set correctly and aim accurate.	No. 1 will not be informed of the order in which the targets will be given out. Different ranges will be ordered for each target. The test consists of traversing from left to right and from right to left. A complete row of oblique bulls will be traversed on each case. The order "Stop" will be given once, but not before the centre of the traverse has been reached. The aim will be checked after the order "Stop" and when the end of the traverse is reached. Tapping back to correct errors is not allowed.
No. 6 Traversing.	Gun mounted at 25 yards from the M.G. target and loaded. No. 1 will be given an opportunity to test his clamp. The M.G. target will not be used for this purpose. Nos. 1 and 2—Take post.	Two	No time limit imposed.	When checked at any time, to be within 15' for direction. Elevation to be correct.	

No. 7 Controlled Corrections. (a) Direct. (b) Indirect. i. Elevation.	Gun loaded and laid on target. Nos. 1 and 2 in position. Order to fire given. Gun loaded and laid on aiming post. Elevation checked by clinometer. Nos. 1 and 2 in position. Tangent sight set at 2,500.	Three	8 seconds from correction being ordered until No. 1 calls "On". 6 seconds from correction being ordered until No. 1 resumes holding.	Sights correctly adjusted and gun accurately relaid. Correct alteration put on by wheel within 2 minutes either way. Slide correctly adjusted.	Corrections exceeding 300 yards up or down will not be given. Corrections exceeding 45 minutes up or down will not be given.
ii. Direction.	Gun loaded and laid on aiming post with sight at 2,500. Bar foresight set centrally. Nos. 1 and 2 in position.	Three	8 seconds from correction being ordered until No. 2 holds up his hand.	Bar foresight correctly adjusted to within 5 minutes either way. Gun correctly relaid.	Corrections exceeding 40 minutes either side of zero setting will not be given.
No. 8 Laying the gun for elevation—indirect.	Gun mounted and approximately level, rear cover open. The clinometer in its case and set at zero. The man being tested will adjust the clinometer and lay the gun.	One	20 seconds from an order for elevation or depression being given until the bubble is central.	Elevation to be correct to within 2 minutes either way.	An order for elevation or depression of not more than 4° will be given. The order will always include minutes given in multiples of 5. Clinometer to remain on gun.
No. 8 Laying the gun for elevation—indirect.	Gun mounted, dial sight attached. All scales set to zero. Gun approximately level. No. 1 in position at gun.	Three	10 seconds from the command "Hundred" until No. 1 has retained his holding.	Correct setting on the range and angle of sight drums. Bubble level to within 2 minutes.	Ranges ordered will be between 1,200 and 2,000 yards. Angle of sight of not more than 1° plus or minus will be ordered, and will include 5 minutes. In order that the time taken to give out the order will not interfere with the time allowed for the test the Angle of Sight will be given immediately after range.

Name of test	Conditions before test	Number of tests	Time allowed	To pass	Remarks
(1) No. 9 Immediate Action. Additional stores as for teaching I.A.	(2) 4 guns will be mounted about 3 yards apart. Stop- pages set up, crank handles covered and the guns laid off the aiming mark. The testing N.C.O. at each gun will have a spare lock and clearing plug. One stoppage in each position will be set up. Special stop- pages not to be included. Note.—The testing N.C.O. will act as No. 2. Target and range made clear to all before Test com- mences.	(3) One (Carry out I.A. on 4 guns)	(4) No time limit im- posed. Average time used in assessing points. (See Remarks.)	(5) Not less than 60 points.	(6) The Test consists of rectifying the stoppage of all 4 guns in turn. The No. 1 being tested will be warned that when he has carried out the I.A. on a gun, he will immediately double to the next gun, until the last gun is reached. Time will be taken from the command "GO" until the testing N.C.O. calls "UP" when the I.A. is complete on the last gun. The time is taken of each individual, and the average time worked out and points awarded as follows:— For every 5 seconds or part of 5 seconds below the average time—add 1 point to points gained in I.A. For 5 seconds or part of 5 seconds above the average time, deduct 1 point. Total points awarded for correct I.A. carried out on each gun = 20. Deductions : Totally incorrect, 20 points. Partially incorrect, 5 points. Guns not relaid, 5 points.

No. 10 Director. Stores required :— 1 Director. 1 Aiming Post.	An aiming post will be put out to represent a gun, a director will be mounted 50 yards in front of it. The elevation scales set at zero, bubble approximately central, the index plate clamped at 180° and the socket un- clamped. The target on which the director is to be laid will be indicated. The director will be laid within 10° either side of the target. Gun mounted, man to be tested kneeling on right side of gun with Bar Foresight (set at zero) in its pouch, carried slung over the left shoulder.	One	30 seconds from the command "GO" until the angles have been called out.	Angles correct within 10 minutes for direc- tion and within 5 minutes for elevation.	Incorrect aim, 2 points. Minor errors, 2 points. Not changing lock when required, 10 points. The angle of sight to the target (which must be clearly defined) must not exceed 1° plus or minus. The N.C.O. being tested will lay on the target and measure the angle of sight. He will then measure the angle of direction to the aiming post. Both angles being called out.
No. 11 Bar Foresight.	Gun mounted and laid on a zero post erected 10 yards in front with direction dial at zero and clamped.	Three	8 seconds from com- mand "Fire" until foresight affixed.	Foresight correctly affixed.	Order for the test will be "Prepare for In- direct Fire". The Test should also be carried out in dark- ness, the same standard being reached. Order will be "All Right (or Left)... Deg. ... Mins." (Switch will not be less than 40°.)
No. 12 Use of Dials.		Three	10 seconds from com- mand "Minutes" until gun again clamped.	Angle to be correct within 10 minutes.	

SECTION 13—SIGNALS

1. In addition to the signals already taught in Infantry Training, 1937, Secs. 30–32 (Cavalry Training—Horsed, 1937, Sec. III) the following signals are necessary for fire control and use in the field by machine gun units.

2. They will be more easily remembered if, instead of being taught in one lesson, they are introduced when the relative stage of training is reached.

3. Fire control signals.—

Signal	Interpretation	When taught
(1) No. 2 with his hand raised in line with and behind the shoulder of No. 1.	(2) Gun ready to fire.	(3) Whilst teaching adjusting sights and laying the gun in E.G.D.
NOTE.—On the order "Wind", or on a correction being given, No. 2 will lower his hand. He will raise his hand again when No. 1 has made the necessary allowance.		
Both arms fully extended, raised from the sides to a position level with the shoulders and lowered again. This motion is repeated quickly several times.	Action.	} Before and during section drill—direct fire.
Arm swung in a circular motion in front of the body.	Cease firing.	
Fire controller with his hand raised above the shoulder.	Prepare to fire.	
Fire controller's hand lowered to the side.	Fire.	
Fire controller's arm waved horizontally to and fro.	Stop.	
NOTE.—No. 2 will order No. 1 to stop.		
Fire controller— Semaphore		
U	Up 50 yards or 10'	} During platoon drill, in-direct fire.
N	Down 50 yards or 10'	
T	Right 30'	
L	Left 30'	

4. Field signals.—

A. Platoon sergeant or Section Commanders or Section corporals	} to join immediate superior.	} Before section training.
AA. All N.C.O.s to join the platoon commander		
B. More ammunition required	} During section drill, direct fire.	
H. Vehicles to come forward (Infantry)		
R. Led horses to come forward (Cavalry)		
W. Water required		

SECTION 14.—ADVANCED MACHINE GUN HANDLING.

The object is to adapt the lessons taught in elementary gun drill as far as possible to service conditions.

This subject provides an essential link between drills and collective training, and should be commenced as soon as men are proficient in elementary gun drill.

It should be practised again within each section at the beginning of the period allotted for section training.

LESSON 57.—MAN-HANDLING OF LOADS.

Instructor's Note

Stores required:—

Gun, tripod, condenser can and dummy tube, 5 belt boxes with belts and drill cartridges, spare parts case. All to be at service weights.

1. Explain and demonstrate.—

The methods of carrying the gun, tripod, etc., taught in drills are not always the most convenient for carrying long distances, or when concealment from ground observation is necessary. Any comfortable method may be adopted, which does not damage the load, and which conceals from the enemy the nature of the load carried. The following methods are suggested:—

i. *Tripod.*—

- Walking or doubling.—Under the arm or in front of the body.
- Crawling.—Any convenient method. The tripod may be dragged along the ground provided that the dial is not damaged.

ii. *Gun.*—

- Walking or doubling.—Across the body, barrel casing resting on the right forearm, left hand gripping the left traversing handle and free end of the condenser tube; or
Close to the right side with the muzzle pointing upwards. It will be held at the crosshead bracket with the right hand, the free end of the tube may be pushed through the traversing handle.
(Cavalry.—As above, right hand holding the pivot.)
- Crawling.—The man will lie on his right side, head to the front, weight of the body supported on the right elbow, right knee bent. He will support the gun with the barrel casing resting on the right forearm, the breech casing on the inside of the right thigh. He will grasp the left traversing handle with the left hand, which will also contain the free end of the tube. He will crawl forward making use of his right elbow and left leg.
(Cavalry.—As above, the breech casing and cross-head resting on the inside of the right thigh.)

iii. *Belt boxes and condenser can.*—

- (a) Walking or doubling.—One belt box under each arm, and one belt box or the condenser can in one hand.
- (b) Crawling.—Any convenient method may be adopted. A suggested method is that the leather handles of a belt box may be hung over the toe of the man's boot. By this method the man can crawl on his side with two belt boxes, one on either foot and can hold the condenser can in one hand.

iv. *Two-man load.*—

NOTE.—The gun will be unloaded before the movement described below is carried out.

- (a) If it is required to move a gun and tripod, which have already been mounted, a short distance to a new position, the whole may be carried by two men as follows:—

No. 1, right hand on rear leg, left hand, containing one belt box on the left front leg.

No. 2, left hand, containing one belt box, on the right front leg, condenser can in the right hand.

- (b) The gun mounted on the tripod can be moved by two men crawling forward each grasping a front leg.

2. Practise squad.

LESSON 58.—MOUNTING THE GUN ON EXPOSED GROUND.

Instructor's Note

Stores required:—

As for Lesson 57.

1. The instructor will explain to the men that the mounting taught to them during drills is not always the most suitable under service conditions owing to the necessity for concealment and the unevenness of the ground.

2. Explain and demonstrate:—

i. Mounting and dismounting the tripod.

To mount the tripod:—

No. 1 crawls forward with the tripod, placing it over the spot indicated. Keeping as low as possible on the left of the tripod with his head to the front, he loosens the jamming handles of the two front legs and opens them by rocking the tripod, first to one side and then to the other. He adjusts the rear leg so that when the tripod is mounted it will be at its minimum height.

(Note.—In obtaining the minimum height, it will be found with most tripods that a firm mounting cannot be obtained by closing the rear leg right up to the socket. It will usually be necessary to adjust the rear leg back one tooth from the socket.)

He raises the tripod until the socket is upright and clamps up the left front leg. He now releases the tripod with the right jamming handle unclamped.

An alternative method of mounting the tripod.—

Before giving him the order "MOUNT GUN," the No. 1 will now be told to set the rear leg at an angle suitable for the selected gun position. In addition, the two front legs will be swung forwards and upwards and be clamped in a suitable position over the rear leg.

To dismount the tripod.—

No. 1 will loosen the left and rear leg jamming handles, and will adjust the rear leg to the sitting position. He will close the legs together and tighten up all jamming handles.

ii. Mounting and dismounting the gun and tripod.

To mount gun.—

(Infantry).

No. 1 will remove the elevating and crosshead joint pins. No. 2 crawling forward with the gun, will time himself to arrive at the position when No. 1 has prepared the tripod as above. He will then open the sliding shutter. Together they will mount the gun on the tripod, No. 1 inserting the crosshead joint pin; No. 2, the elevating joint pin. (See Plate 9.)

(Cavalry).

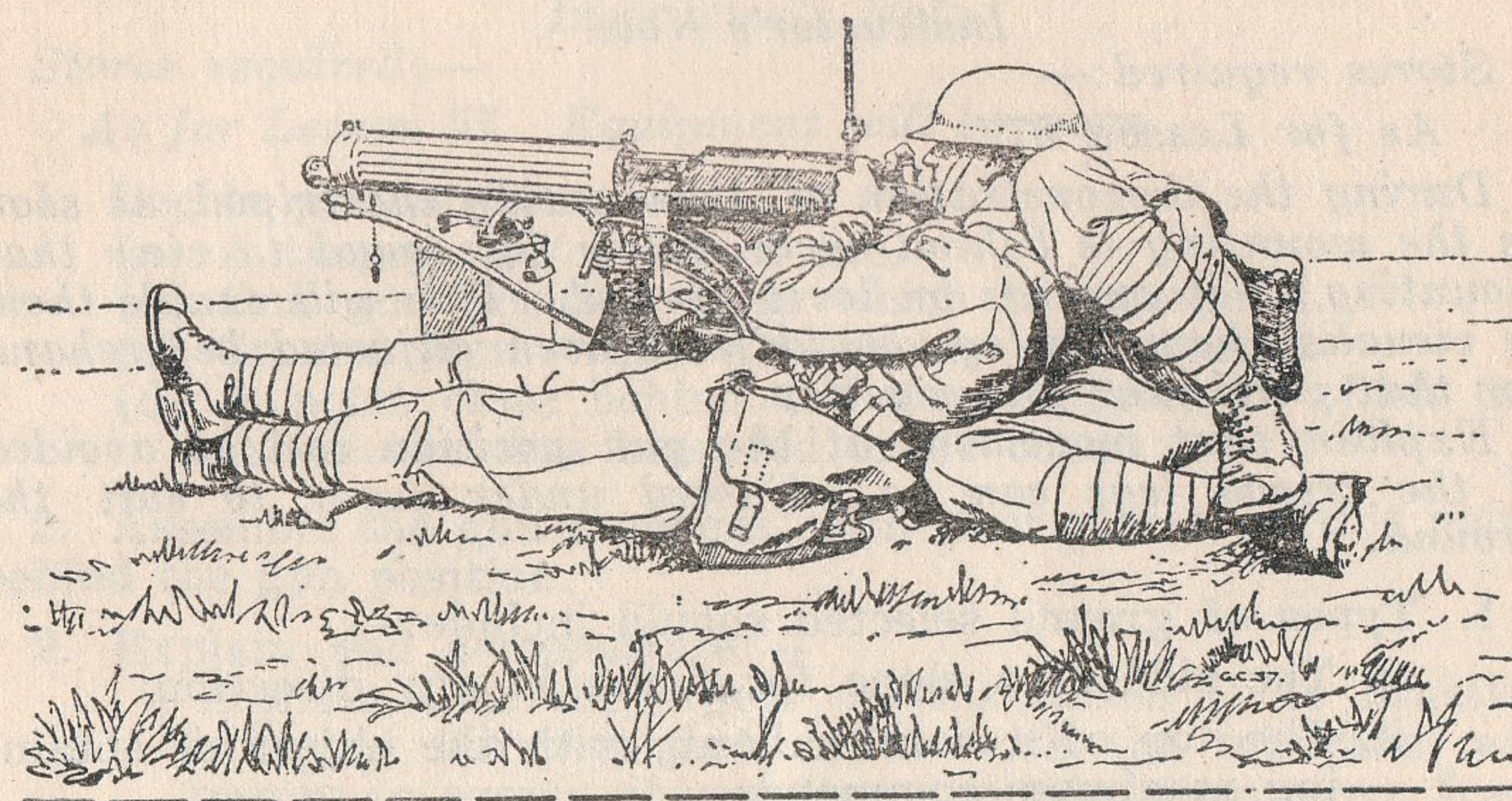
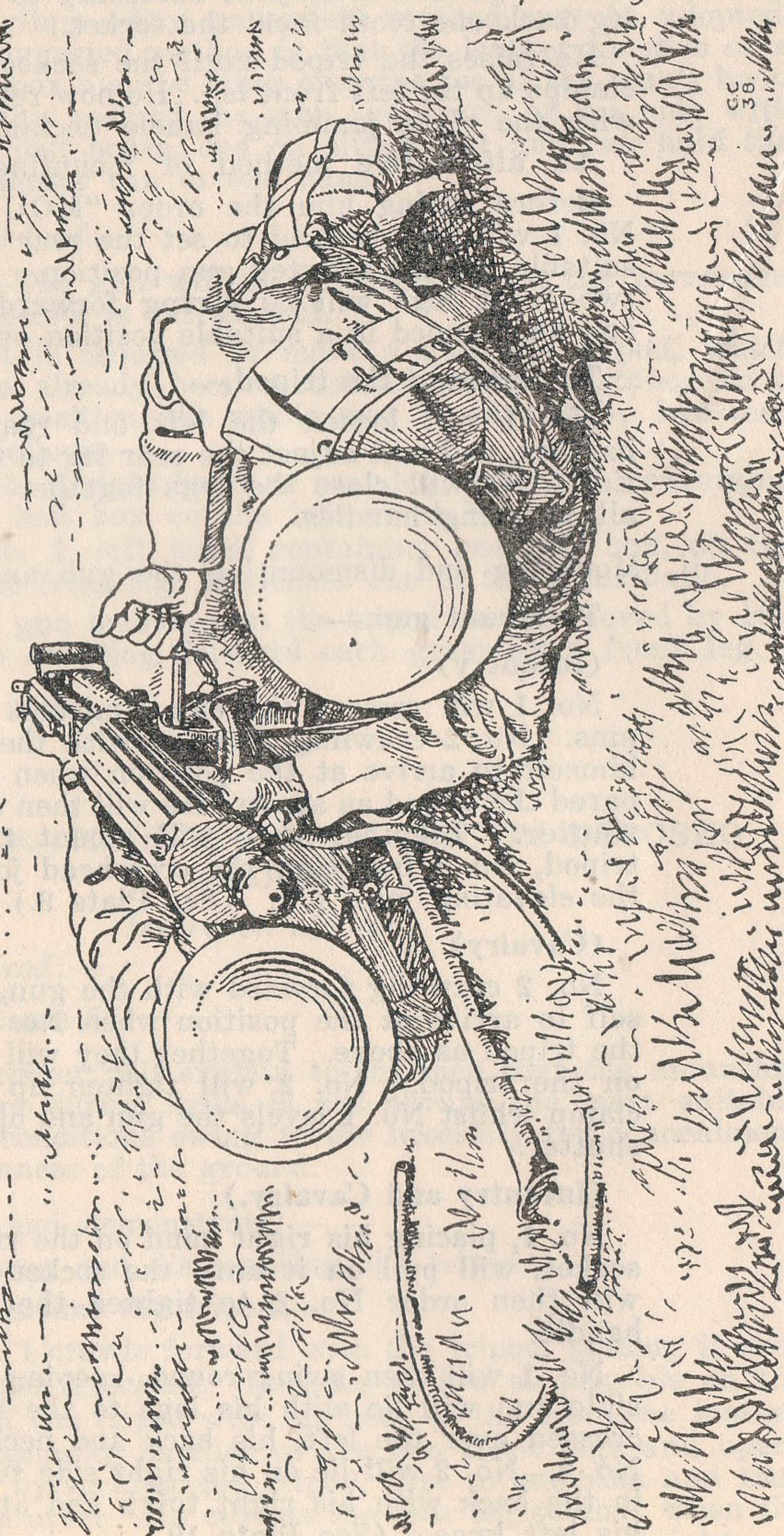
No. 2 crawling forward with the gun, will time himself to arrive at the position when No. 1 has prepared the tripod as above. Together they will mount the gun on the tripod. No. 2 will tighten up the traversing clamp whilst No. 1 levels the gun and opens the sliding shutter.

(Infantry and Cavalry.)

No. 1, placing his right hand on the right side of the socket, will pull on it until the socket is upright and will then order No. 2 to tighten the right jamming handle.

No. 1 will then swing round, keeping as low as possible and will lie with his legs to the front, right leg crossed over the left, his back and neck supported by No. 2. No. 2 will lie on his right side supporting No. 1 in the back with his right thigh and at the neck with his left knee. (See Plate 10.)

MOUNTING THE GUN (INFANTRY)



No. 3 will not disengage the quick release straps of the belt boxes, nor unscrew the cap of the condenser can. He will crawl forward only far enough to place his stores within reach of the No. 2, screening himself behind the Nos. 1 and 2 as much as possible.

No. 2 will place the stores in their correct position, disengaging the quick release straps of the belt boxes, unscrewing the cap of the condenser can and inserting the tube.

To dismount the gun.—

No. 3 will crawl forward to a position in rear of the gun to take the belt boxes and condenser can, which have been handed back by No. 2, who will first have fastened the quick release straps of belt boxes and the cap of the condenser can. He will then crawl clear of the position.

Nos. 1 and 2 will then either:—

Crawl back, dragging the mounting, and dismount it under cover; or

They will dismount the gun as follows:—

(Infantry.)

No. 2 will loosen the right jamming handle. No. 1 will remove both pins and, after No. 2 has removed the gun, will replace them.

No. 2 will remove the gun, close the sliding shutter and crawl clear of the position with it.

(Cavalry.)

No. 1 will close the sliding shutter and elevate the gun fully. No. 2 will loosen the right jamming handle and unscrew the traversing clamp to the full extent. Assisted by No. 1, he will lift the gun off the tripod and crawl clear of the position with it.

3. Practise squad.

LESSON 59.—MOUNTING THE GUN ON UNEVEN GROUND.

Instructor's Note

Stores required:—

As for Lesson 57.

During the demonstration of dismounting the tripod, as soon as the mounting is behind cover, allow the squad to view that mounting as it appears on level ground. This will enable them to visualise how the legs could have been adjusted beforehand for that particular gun position.

Explain that movement at the gun position can be avoided if the tripod legs can be adjusted under cover to suit the ground.

1. Types of ground selected should include:—
 - i. The side of a slope for firing in any direction.
 - ii. The top of a narrow bank, with the object of obtaining maximum command.
 - iii. The side of a bank, in order to clear the top or fire along it.
 - iv. A hedgerow, in order to fire through it.
 - v. A shell hole.
 - vi. Broken ground.
2. Explain and demonstrate.—
 - i. Mounting the gun and tripod by moving under cover to a gun position on uneven ground and adjusting all the legs.
 - ii. Dismounting the gun and tripod by dragging the mounting behind cover.
 - iii. Mounting the gun in rear and working forward with it mounted to the selected gun position.

3. Practise squad.

Note.—In examining each mounting the instructor will point out that the following conditions must be fulfilled:—

- i. The mounting must be as low as possible consistent with obtaining a view of the arc of fire or target.
- ii. The position of the rear leg must be governed by the shape of the ground, irrespective of the direction in which the gun has to fire.
- iii. The socket must be mounted upright, and over the spot indicated.
- iv. The shoes only, and not the legs, must be bearing on the ground.
- v. The ground supporting each shoe must be sufficiently firm to ensure that the shoe does not slip during firing.
- vi. No part of the tripod must interfere with the elevating wheel.

LESSON 60.—BRINGING THE GUN INTO ACTION, AS PART OF A SECTION, MAKING USE OF COVER.

Instructor's Note

Stores required:—

As for Lesson 57. Equipment will be worn.

1. Decide previously on:—
 - (a) A target and/or arc of fire.
 - (b) One gun position from which to engage it.
 - (c) Ground from which the enemy can observe.
 - (d) A point close behind the gun position to which the sub-section has been led under cover.
2. Assemble the gun numbers, with their stores, at this point behind the gun position.
3. Explain and demonstrate:—
 - i. Explain that the object of this lesson is to practise bringing the gun into action with the minimum exposure to enemy observation and maximum cover from fire. The importance of this in training for war will be emphasised.
 - ii. Describe briefly the methods by which a section commander may bring his guns into action. (*See Sec. 22.*)
 - iii. Explain the necessity for good team work between:—
 - The Section Corporal in rear.
 - The gun numbers of the Sub-section.
 - The Section Commander and his Orderly in front.
 - iv. Explain the situation regarding enemy observation, etc., and then order them into action using one of the methods in Sec. 22, detailing a man to act as Section Orderly if necessary.
 - v. When the gun is in action, discuss the following:—
 - (a) Ability of the gun to do its task.
 - (b) Suitability of the mounting.
 - (c) Position of the stores at the gun.
 - (d) Position of No. 1 with regard to concealment and freedom of action.
 - (e) Position of No. 2 with regard to:—
 - Concealment.
 - Observing signals from fire controller.
 - Attention to feed.
 - Assisting in immediate action.
 - (f) Position of remaining numbers in regard to concealment and their duties in action.
 - (g) Method of mounting the gun without undue exposure.
 - (h) The move forward of the gun numbers with regard to concealment and time.
 - (i) Action of the Section Orderly (if used).
 - (j) How the gun position adopted could be improved by the use of camouflage or by digging.

PLATE 11

GUN MOUNTED TO FIRE DOWN A SLOPE.

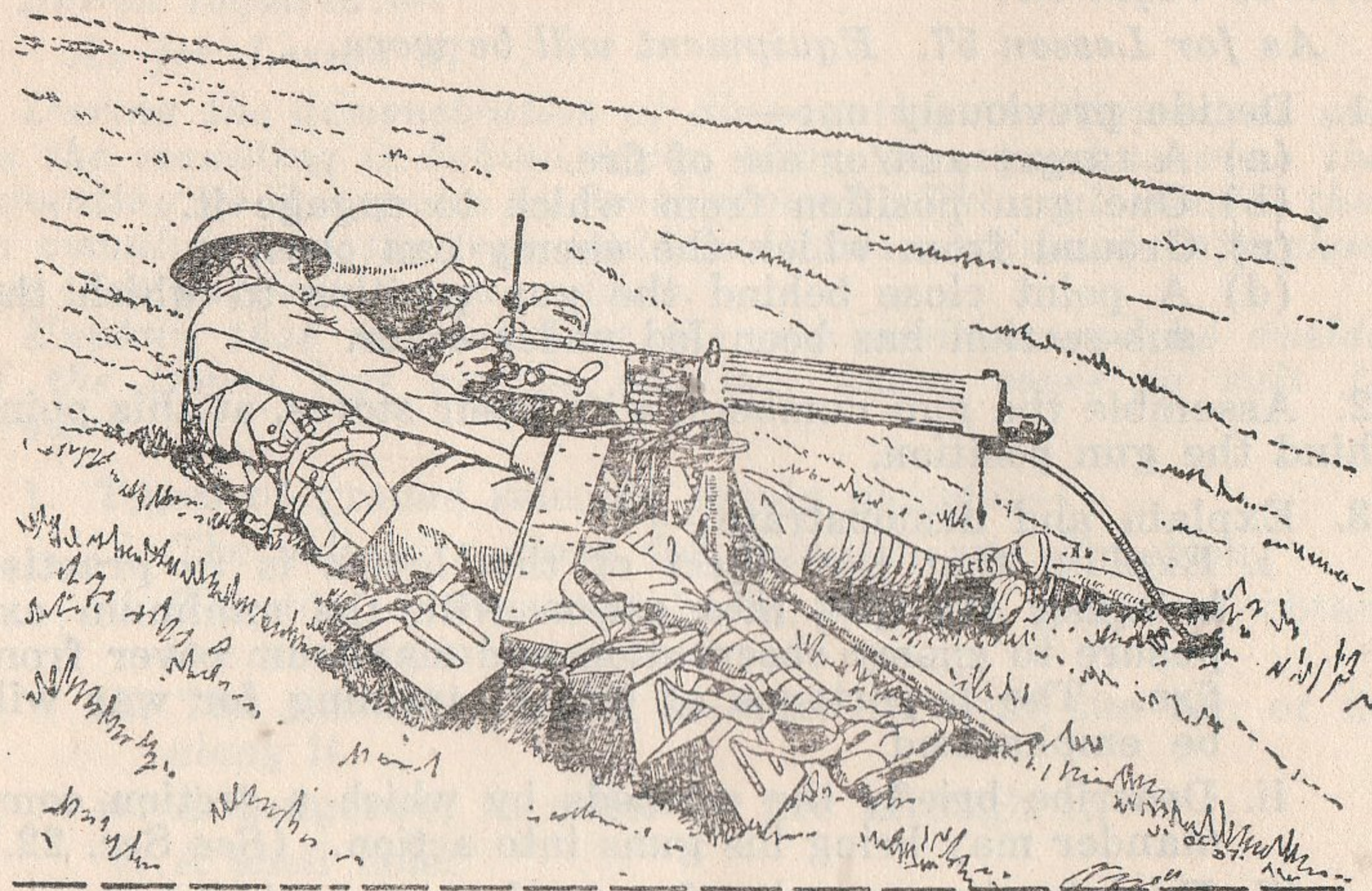
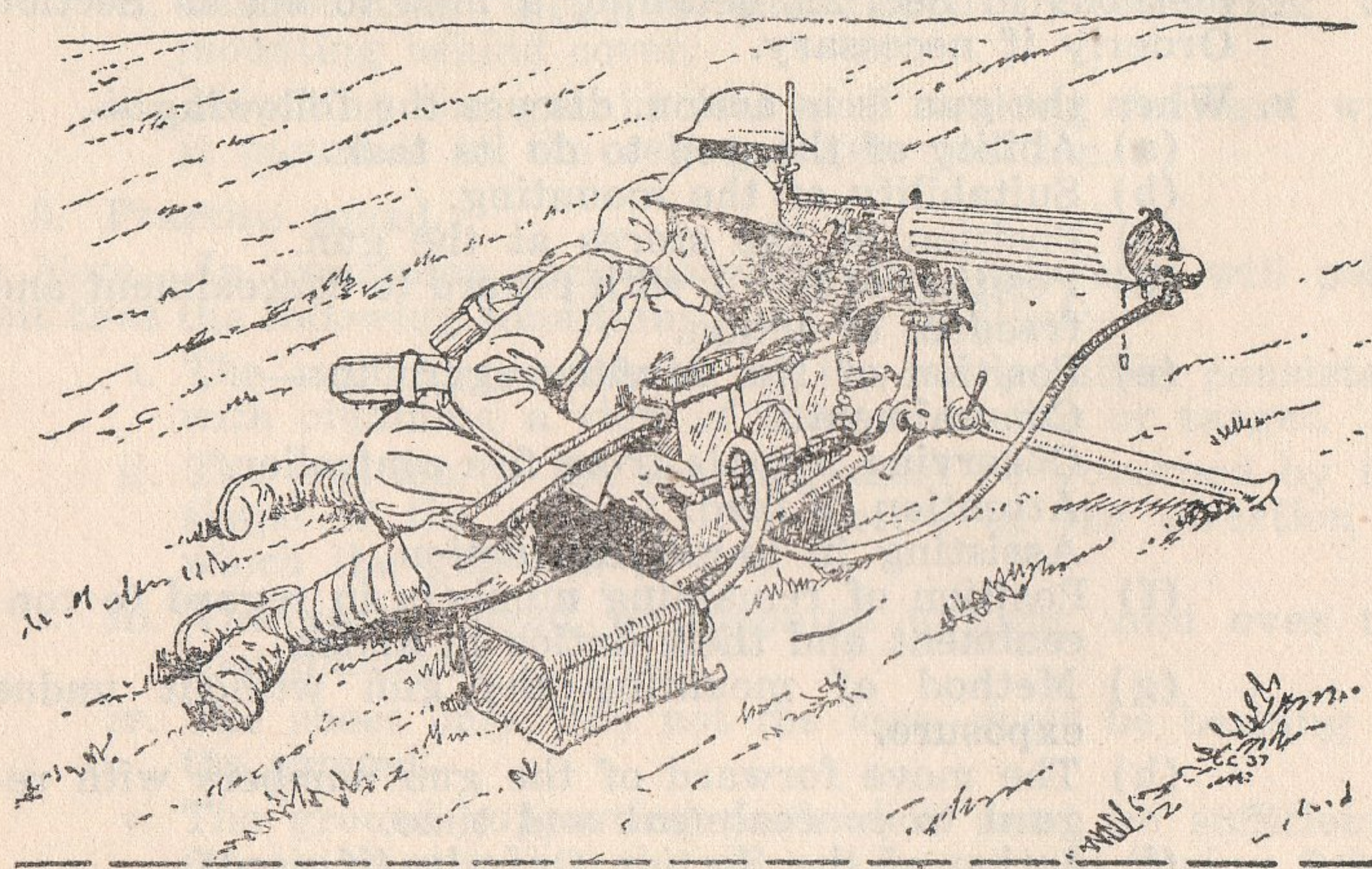


PLATE 12

GUN MOUNTED ON THE SIDE OF A SLOPE.



SECTION 15.—VEHICLES AND TRANSPORT.

LESSON 61.—PACKING OF INFANTRY LIMBER
(or CAVALRY PACK).

Infantry Limber.

- i. The system of packing limbers is based on the following:—
 - (a) To avoid galling animals it is essential that the load in each portion of the limber is well balanced. The heavier load should be carried in the fore part.
 - (b) The arrangement of the loads must facilitate speed in coming into action. Articles which are required first, such as the guns, direct fire equipment and first supply of ammunition, are packed in the fore portion of the limber. Other articles, such as indirect fire equipment, are placed in the rear part. The articles in each part are packed so that those which are likely to be required first are most accessible.
- ii. A list of the equipment carried and the method of distribution of the articles between the portions of the limber (including the equipment for use of platoon headquarters) is shown below.
- iii. The detailed method of packing is shown in Plate 13.

*Instructor's Notes**Stores:—*

*Necessary gear for packing limber laid out on the ground.
An empty limber.*

Sequence of instruction.

1. *Explanation of the various articles carried in the vehicle and their use in general terms.*
2. *Instruction in the method of packing the articles and their position.*

LIST OF EQUIPMENT AND DISTRIBUTION BETWEEN
THE FORE AND HIND PORTIONS OF THE INFANTRY
MACHINE GUN LIMBER.*Fore Portion.*

- 7 boxes of stripless ammunition (or 14 belt boxes, filled).
- 1 Spare parts box (also contains spare joint pins and screw, clamp, checking traverse).
- 2 Capes, machine gunners (for Nos. 2).
- 2 Pairs gloves, machine gunners (for Nos. 2).
- †1 Case, cans, oil (containing 2 cans, lubricating, No. 9, and 2 cans, $\frac{1}{2}$ pint).
- 2 Guns, in chests.
- 2 Tripods.
- 2 Condenser cans.
- 2 Condenser tubes.
- 2 Spare parts cases.
- *2 Shovels, G.S.

Hind Portion.

- 1 Rangefinder, in box (when brackets are available).
- 2 Very pistols in cases.
- 1 Valise, horseshoe, filled.
- 2 Hangers (1 tripod hanger, 1 gun hanger).
- 2 Ammunition racks (packsaddlery).
- 2 Surcingles, web.
- 2 Surcingles, leather, with pads.
- 2 Buckets, water, canvas (containing 4 hay nets, 2 brushes, harness, 4 brushes, horse).
- 1 Lamp, aiming, M.G. box (containing night sights, spare batteries and bulbs).
- 2 Blankets (for off horses).
- 1 Folding saw.
- 1 Mallet.
- 2 Sets pegs. Line in cases.
- 7 Boxes of stripless ammunition (or 14 belt boxes, filled).
- 2 Aiming posts.
- 2 Zero posts.
- 2 lb. of old linen (for gun maintenance).
- 4 Belts, empty (spare for replacement).
- 2 Packs (for drivers).
- 4 Rugs, horse (if ordered).
- ‡2 Clinometers, in cases (or dial sights in lieu, when issued).
- ‡2 Bar foresights in pouches (not required when dial sights are issued).
- ‡1 Director.
- *1 Stand, director.
- *2 Picks, head and helve.
- *2 Billhooks.
- *2 Shovels, G.S.
- ‡2 Torches, hand.
- 1 Box, M.G. stores, hooked on side of limber.
- Signal cartridges (as ordered).
- §Drawing instruments, etc.

NOTES.—‡In addition, a further Platoon reserve of oil is carried in one limber per platoon in a case, cans., oil containing 4 cans, oil, M.G.

‡When the box, M.G. stores is available, these articles will be carried in it. In other circumstances, they are placed as a top load and kept separate from the tools.

*When the necessary fittings are available, these articles will be carried attached to the outside of the limber. In other circumstances, they will be carried inside the limber in the most convenient way.

§Certain equipment on issue to Platoon H.Q. will also be carried in one section limber as ordered. This consists of—

Field plotter,

Megaphone,

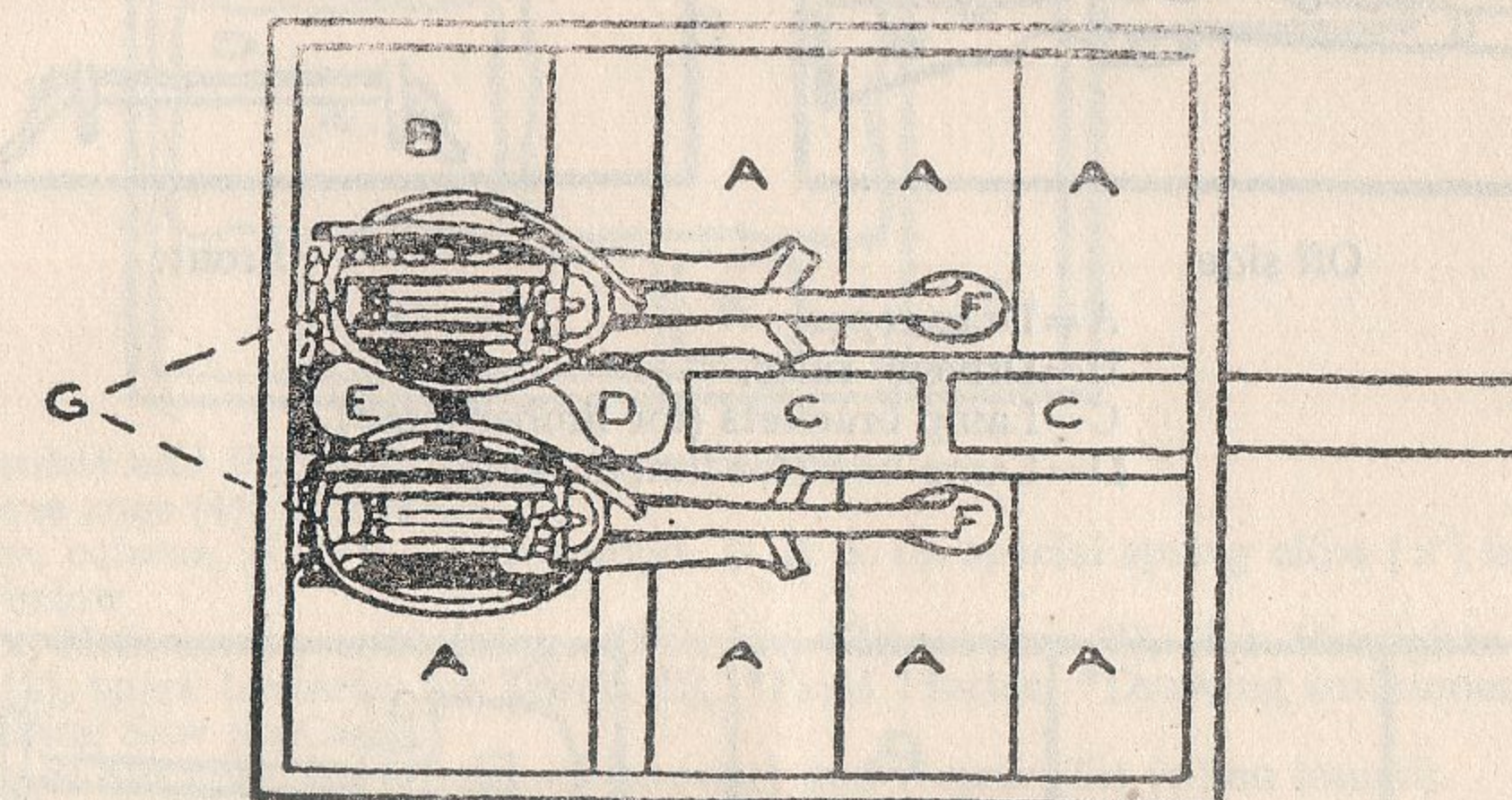
Instruments, drawing, M.G.

Equipment for horse lines, when issued, will be carried in the hind portion. The rifles of the drivers will be fitted in the brackets on the exterior of the fore portion.

PLATE 13

DETAILED METHOD OF PACKING LIMBERS

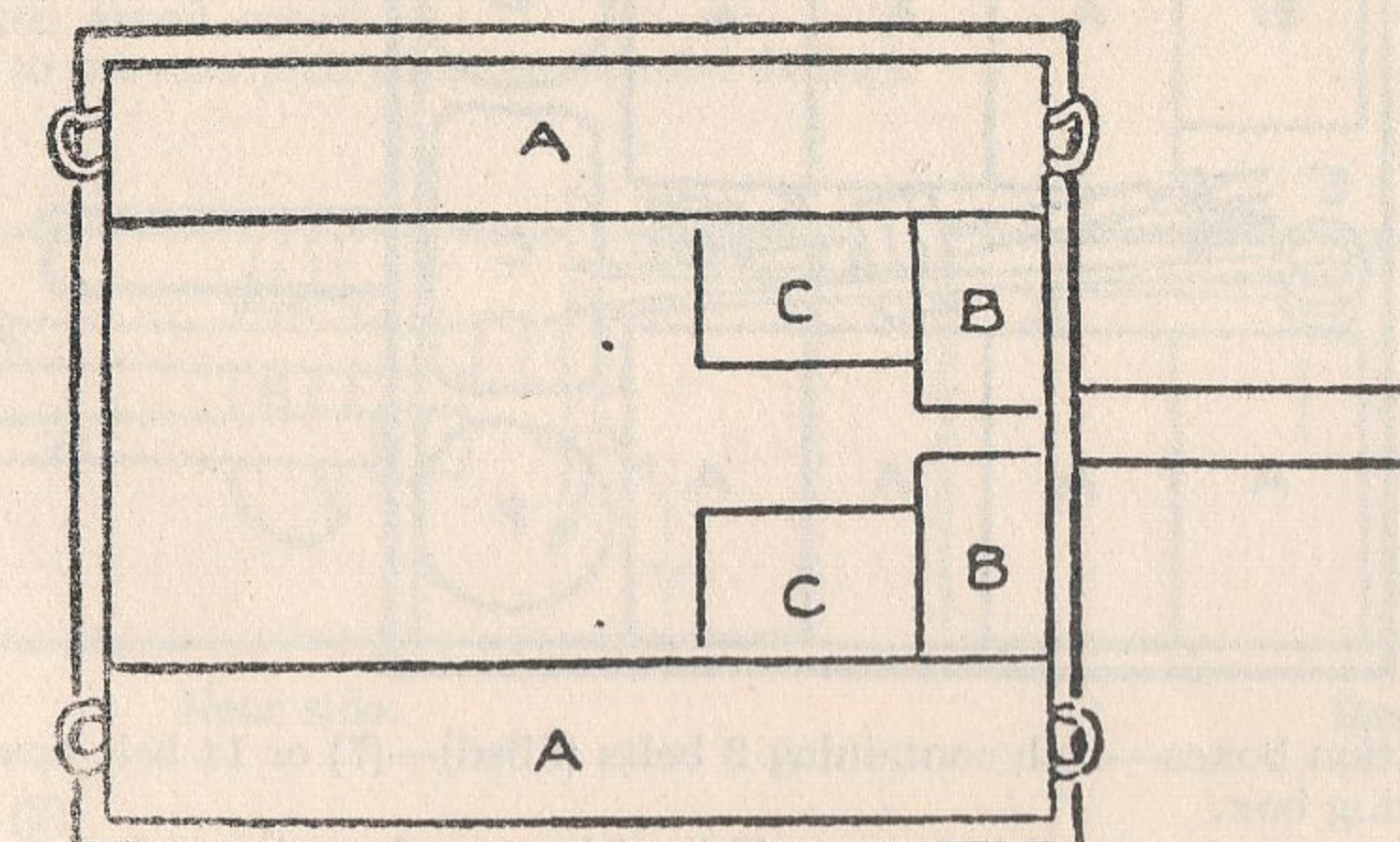
Fig. 1.—Limber—Fore portion—Bottom layer.



- *A = Ammunition boxes—each containing 2 belts (filled)—(7) or 14 belt boxes.
- B = Spare parts box.
- C = Cases, cans, oil (2); includes Platoon reserve oil.
- D = Capes, machine-gunners (2).
- E = Gloves, machine-gunners, pairs (2).
- F = Tripods, Mk : IV. (2).
- G = Tubes, condenser (2) coiled and hung on elevating gear.

*Corner boxes, large size, must be packed "on edge."

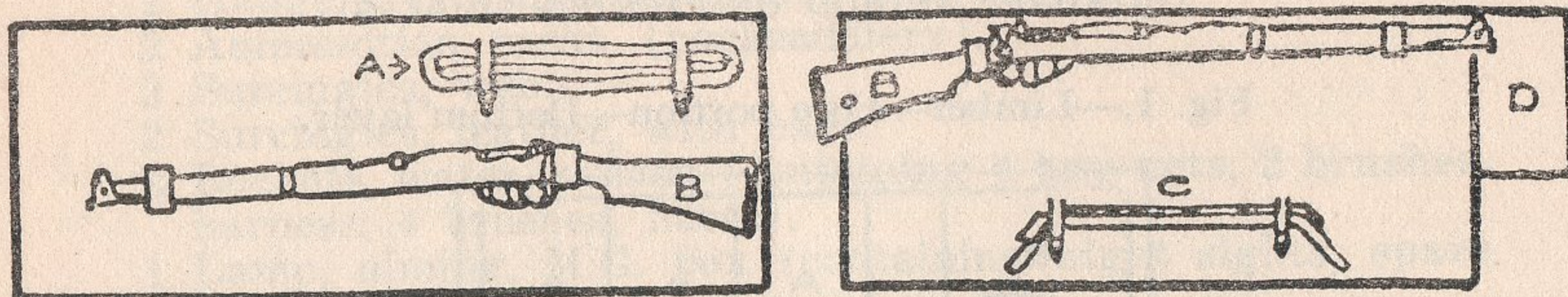
Fig. 2.—Limber—Fore portion—Top layer.



- A = Gun chests (2).
- B = Cans, condenser (2).
- C = Cases, spare parts (2).

Fig. 3.—Limber—Fore portion.

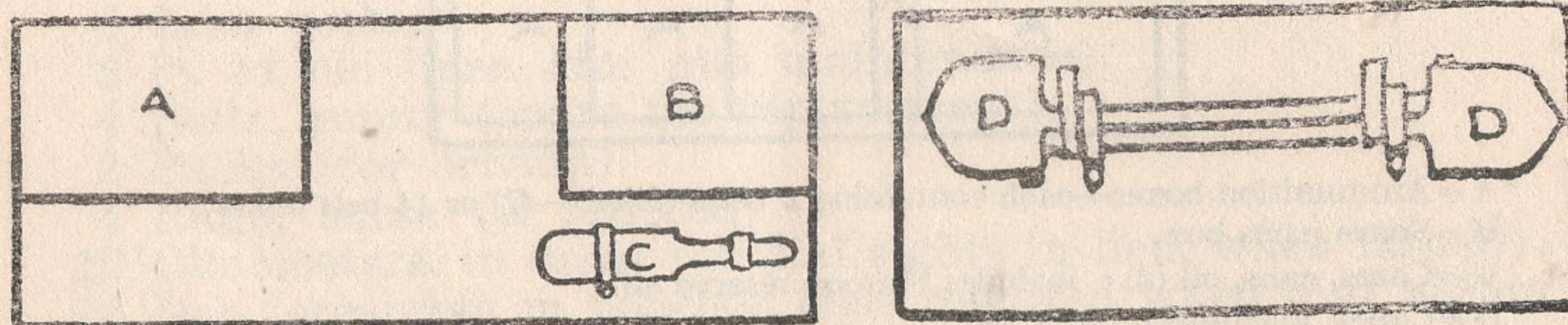
Side panels (outside).



Off side.

Front.

- A=Drag ropes.
B=Drivers' rifles.
C=Lamp brackets (for limber lamp).
D=Lamp box (for limber lamp).



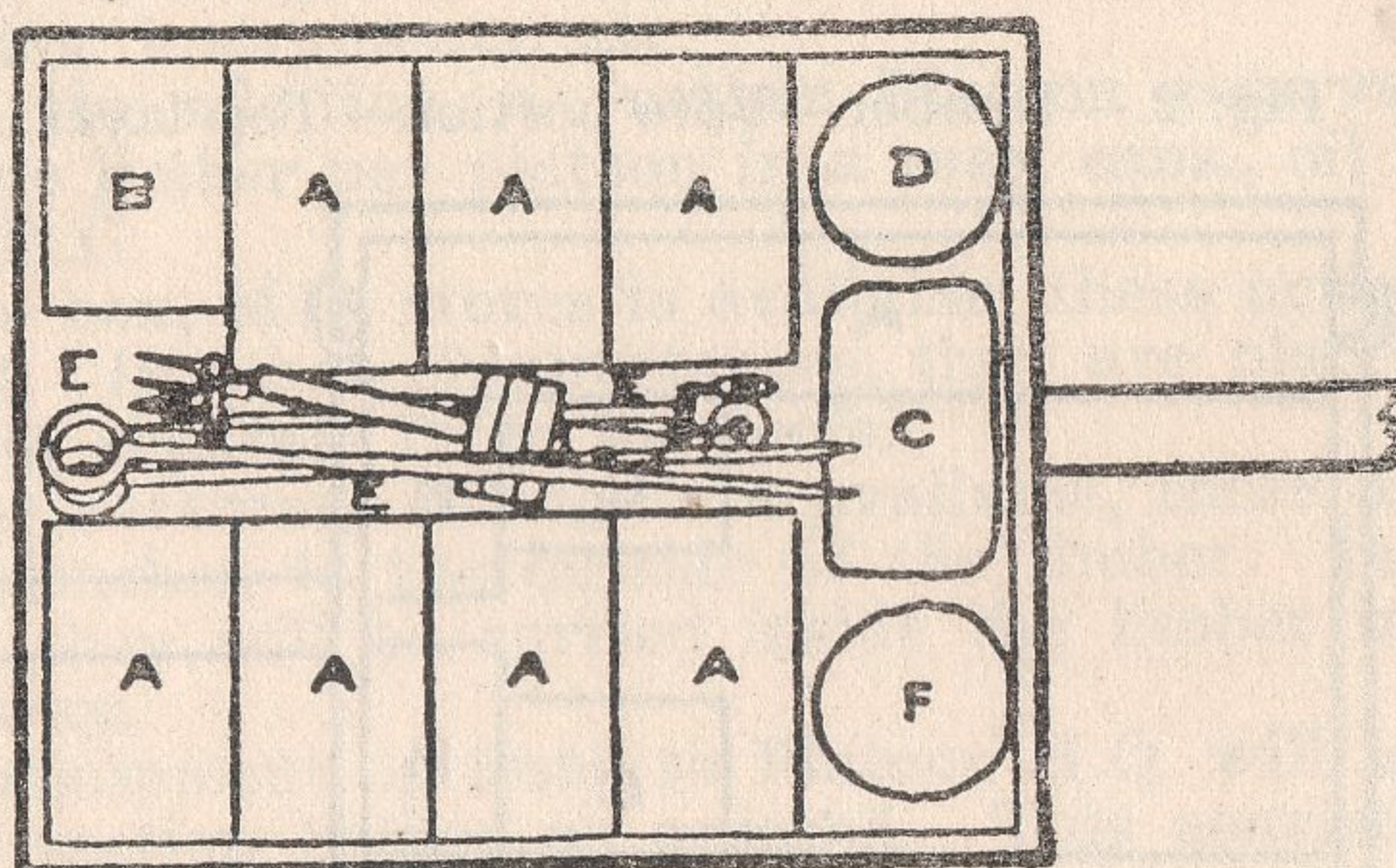
Near side.

Rear.

- A=Lamp box (for limber lamp).
B=Tool box (for limber tools).
C=Brush (for limber).
D=Shovels, G.S. (2).

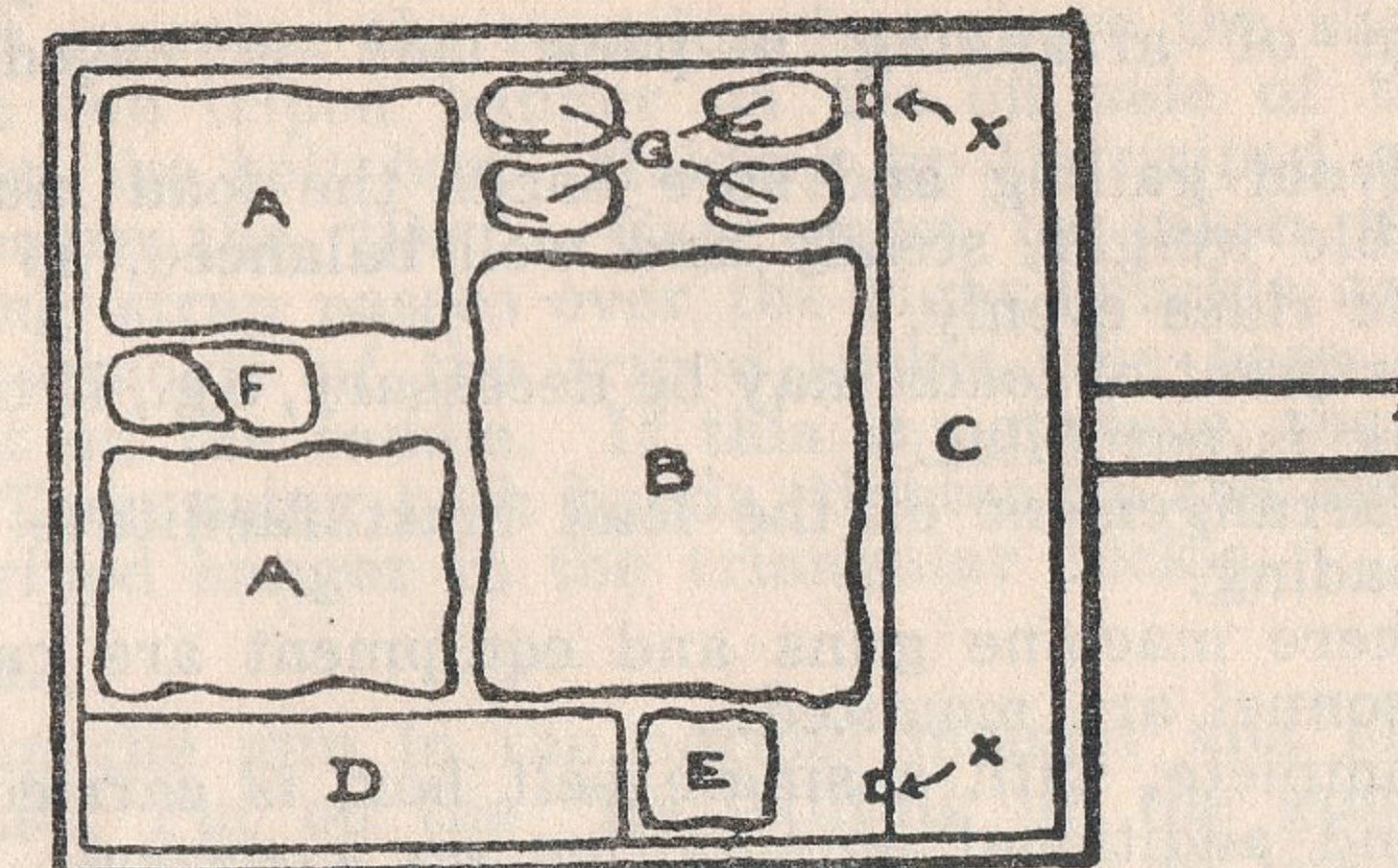
PLATE 13

Fig. 4.—Limber—Rear portion—Bottom layer.



- A=Ammunition boxes—each containing 2 belts (filled)—(7) or 14 belt boxes.
B=Night firing box.
C=Ammunition racks (2), Gun hanger, Tripod hanger (in order from below).
D=H.S. Valise, Very pistols, cased (2), Surcingles, web (in order from below).
E=Target posts (2), Mallet, Zero posts (2) (in order from below).
F=Buckets, water (2), containing in order from below:—Nets, hay (4), Brushes (2), Surcingles, leather, padded (2), Brushes, horse (4).

Fig. 5.—Limber—Rear portion—Top layer.

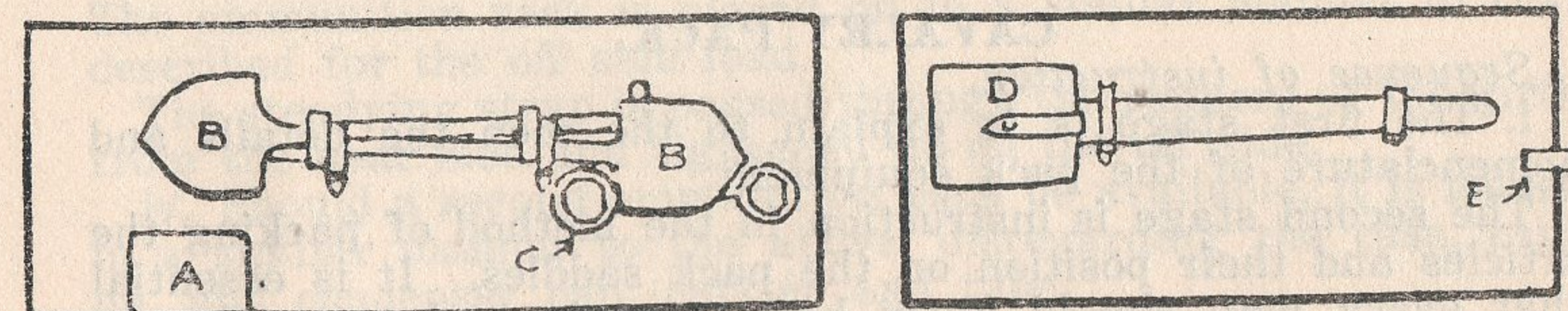


- A=Blanket and Pack—(in order from below).
B=Horse rugs (4), if ordered.
C=Case, canvas, B. & S. Case, wood, B. & S. on special spring clips (X) in order from below.
D=Box, M.G. stores, containing—Director, Clinometers (2), Bar foresights (2), Torches (2), spare batteries for Torch (2), *Field Plotter, *Drawing instruments.
E=Folding Saw (in Case).
F=Bag of old linen (for gun maintenance) and Repair Kit (when issued).
G=Spare web belts, empty (4).

Note * only in limber carrying Platoon H.Q. stores.

Fig. 6.—Limber—Rear portion.

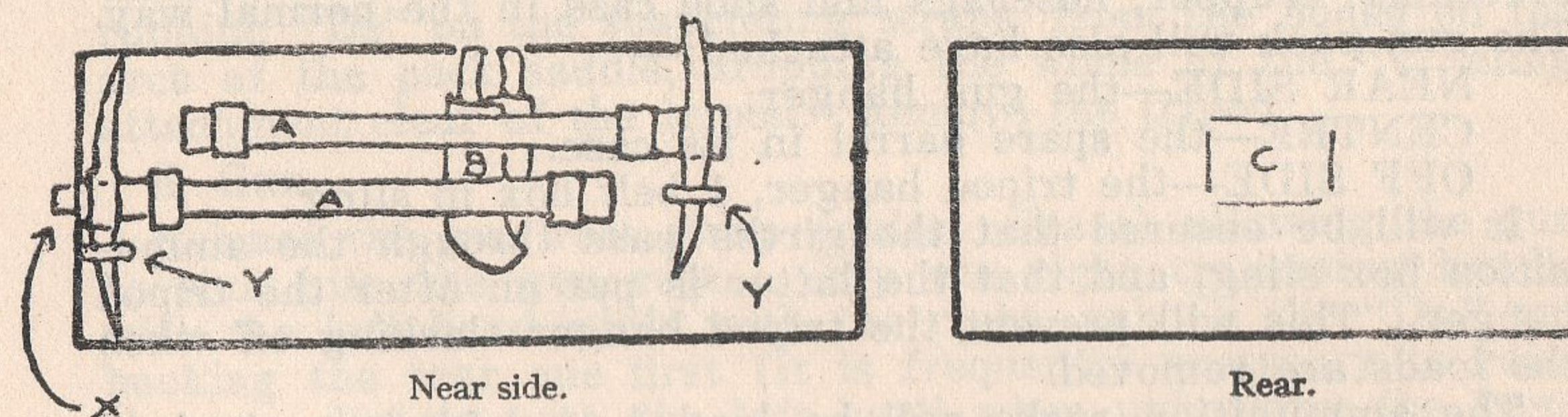
Side panels (outside).



Off side.

Front.

- A=Grease box.
B=Shovels, G.S. (2).
C=Spanner (for limber).
D=Director, stand, cased.
E=Stop, to prevent pick slipping (special fitting).



Near side.

Rear.

- A=Picks (2).
B=Billhooks (2).
C=Company number or letter and number of wagon.
X=Stop, to prevent pick slipping (special fitting).
Y=Pings (2), special fittings.

Cavalry Pack.

The system of arranging a pack load is based on the following:—

- (a) To avoid galling and sore backs the load must be of suitable weight, steady and well balanced, so that the saddle rides evenly.
Adjustment of loads may be necessary, e.g., if the barrel casing is not filled.
- (b) The arrangement of the load must facilitate speed in off-loading.

In units where machine guns and equipment are carried on pack, all personnel are mounted.

The gun complete, with a single belt box, is carried on one pack horse and additional ammunition on a second. In war, there are two ammunition packs to each gun; in peace, one.

The rangefinder and indirect fire equipment are carried on the saddles of the riding horses. The night firing equipment, spare parts box, etc., in an ammunition lorry.

The system of arranging a pack load and the sequence of instruction is set out below.

(For details of sets and description of pack equipment, see App. II.)

Infantry Pack.

Details of equipment are shown in App. II. The method of arranging the pack loads is shown in App. III.

CAVALRY PACK.

Sequence of instruction.

- i. The first stage is to explain to the men the details and nomenclature of the pack equipment.

The second stage is instruction in the method of packing the articles and their position on the pack saddles. It is essential that every man should know how to strip and assemble the saddles.

- ii. When the men are proficient in the first two stages, they will be instructed in section drill—direct fire.

Procedure of packing.

Pack horses will be saddled up with pack saddle, breast collar, breeching, crupper, nosebags and shoe case in the normal way. The gun pack will also have attached:—

NEAR SIDE—the gun hanger.

CENTRE—the spare barrel in its case.

OFF SIDE—the tripod hanger, 1 belt box in sling.

It will be ensured that the girths pass through the ammunition box sling, and that the latter is put on after the tripod hanger. This will prevent the tripod hanger slacking off when the loads are removed.

The ammunition racks will be loaded as laid down in load tables.

When a second ammunition pack is available, the pick and helve will be attached after saddling up.

- i. Tripod.

Pick up the tripod with the right hand under the dial, the left hand grasping the rear leg just above the shoe. Place the tripod in the tripod hanger on the off side of the pack, just resting on the belt box. Holding up the tripod with the right hand, secure the "Ds." Care must be taken that the front suspending strap passes over the right knuckle and underneath the left knuckle of the tripod socket, the base of the socket lying flat on the saddle. If this is not done, the load will not "ride." Then using both hands, tighten up the detachable strap of the tripod hanger in the triangular buckle.

- ii. Gun.

Pick up the gun in the normal manner and place it on the gun rests. Put on the "Ds," tilting up the gun at the same time by placing the left hand on the pivot of the crosshead and raising it upwards and outwards. Buckle up the "V" sling attachment, taking care that neither the triangular buckle or the straps catch in either the feed block or vulcanite filling plug.

- iii. Ammunition Pack.

Off Side. The case, cans, oil is first placed on by passing the securing strap through and behind the arches of the saddle. The ammunition rack is then attached by slipping the rings on the back of the rack, on to the hooks of the pack saddle.

Near Side. The condenser can in its leather carrier, with the condenser tube rolled and strapped on the upper side is placed between the rack on the near side and the arches of the saddle. The ammunition rack is placed on in a similar manner to that described for the off side load.

The steadying strap is passed through the runners of the girth from the near side and tightened up on the off side.

- iv. Should a second ammunition pack be available, it is loaded in a similar manner to the above, disregarding the case, cans oil, and condenser can, carrier and tube.

Procedure of Off-Loading Packs.

- i. Tripod.

Release the detachable strap of the tripod hanger (quick release strap), grip the tripod at the socket with the right hand while with the left, unhook first the rear and then front running "Ds" on the suspending straps, from the hooks on the arch of the pack saddle, dropping the whole of the "V" sling attachment clear of the tripod. Remove the tripod.

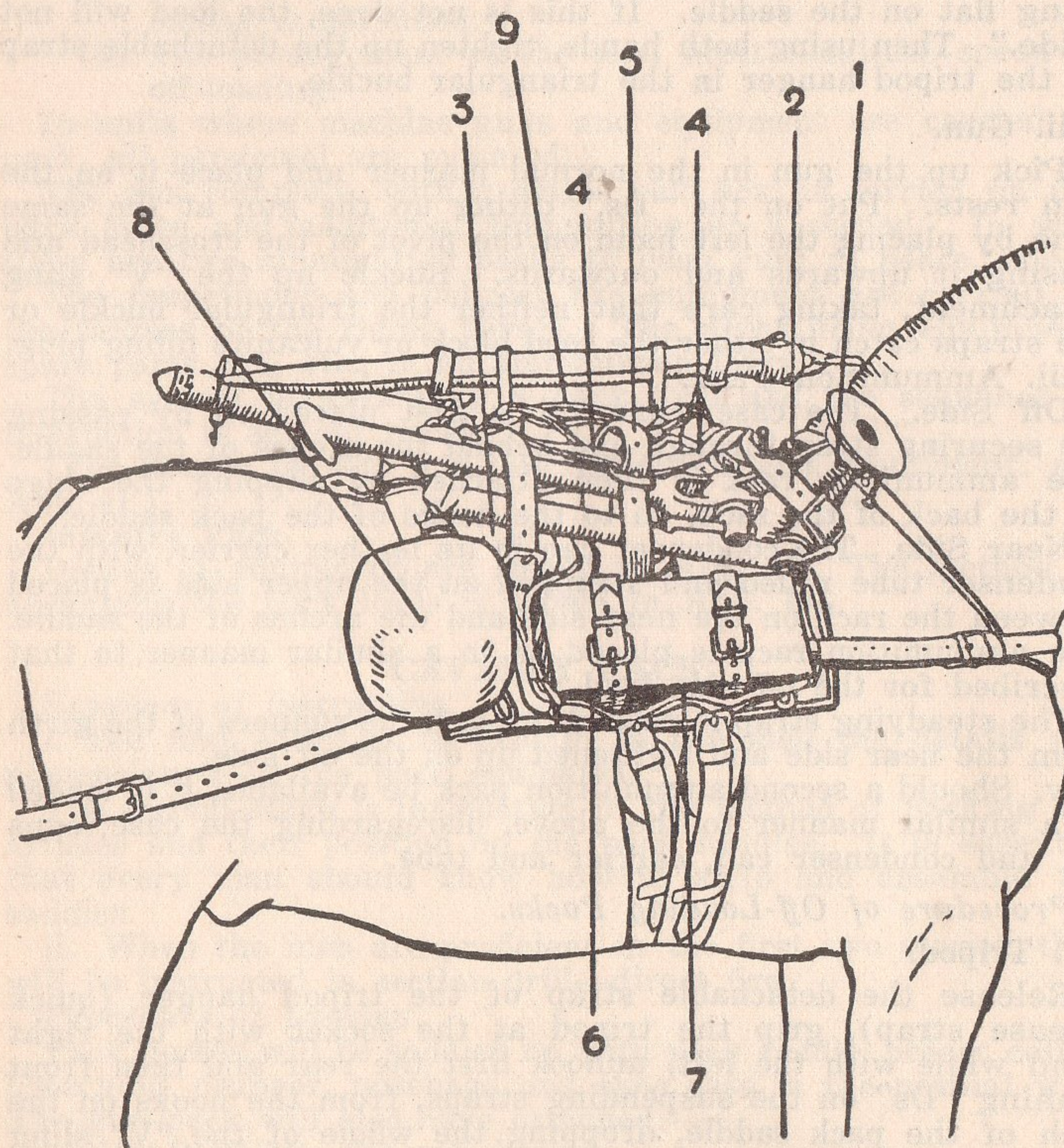
- ii. Gun.

Release the gun rest strap (quick release) allowing the gun to sink into the gun rest. Grip the right traversing handle with the left hand while with the right, unhook the "Ds," unhooking the rear one first (it is frequently necessary to raise the gun slightly with the left hand when unhooking the front "D") and dropping the slings clear. Retaining the grip of the right traversing handle, seize the barrel casing just in front of the crosshead, lift the gun clear of the gun rests and remove the gun.

PLATE 14
CAVALRY—GUN PACK HORSE

Fig. 1

(Off side)

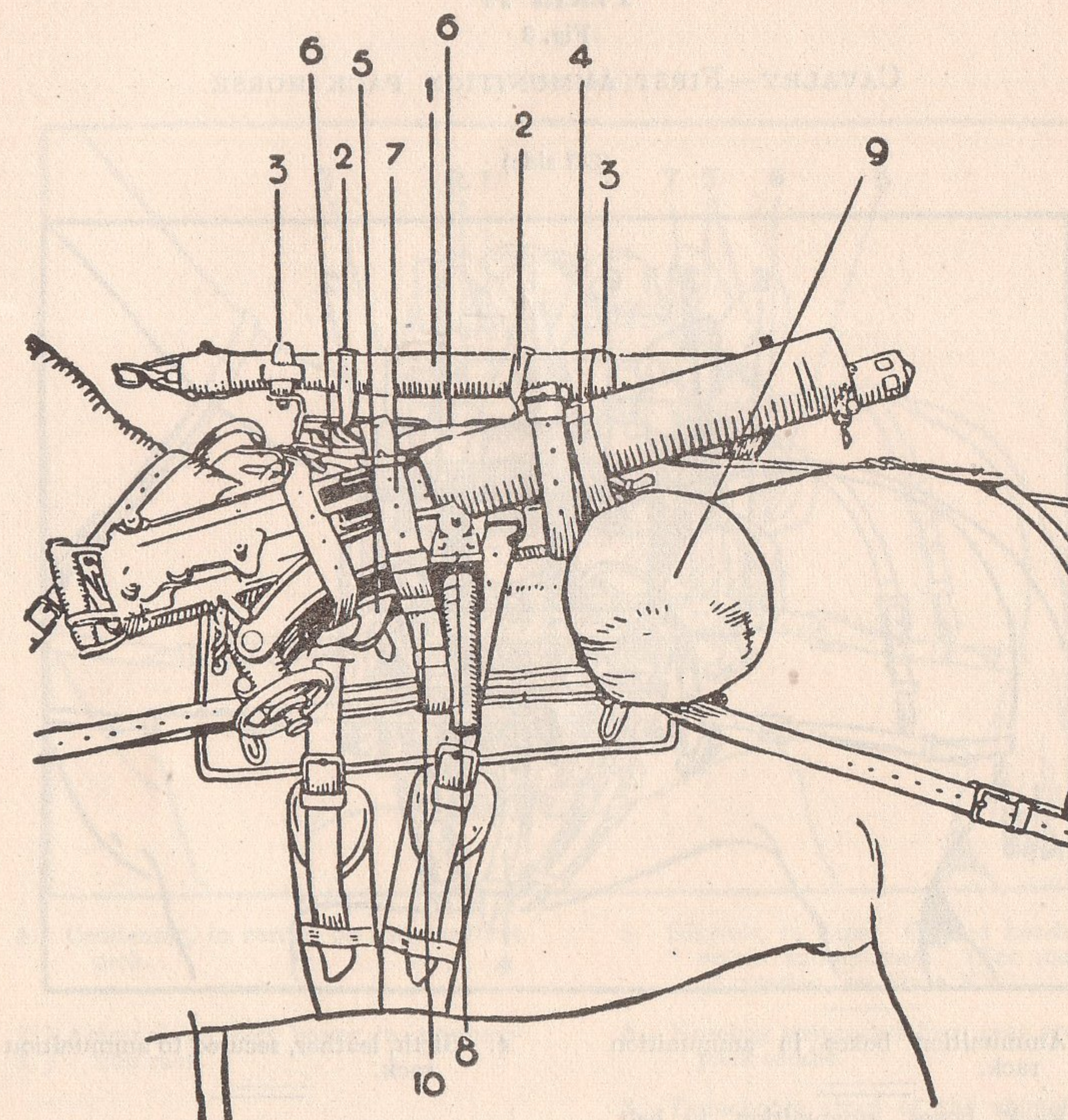


1. Tripod (without crosshead) in tripod hanger.
2. Front suspending strap of tripod hanger.
3. Rear suspending pad on tripod hanger.
4. V-sling attachment of tripod hanger.
5. Detachable strap of tripod hanger brought through the "lay" of the pannel and engaged with the triangular buckle of the V-sling attachment.
6. Ammunition box in sling, box, ammunition, in belt, cavalry.
7. Strapping, forming the sling, box, ammunition, in belt, cavalry.
8. Nosebag suspended from rear arch of the pack saddle.
9. Shoe case suspended between the front and rear arches of the pack saddle.

CAVALRY—GUN PACK HORSE

Fig. 2

(Near side)



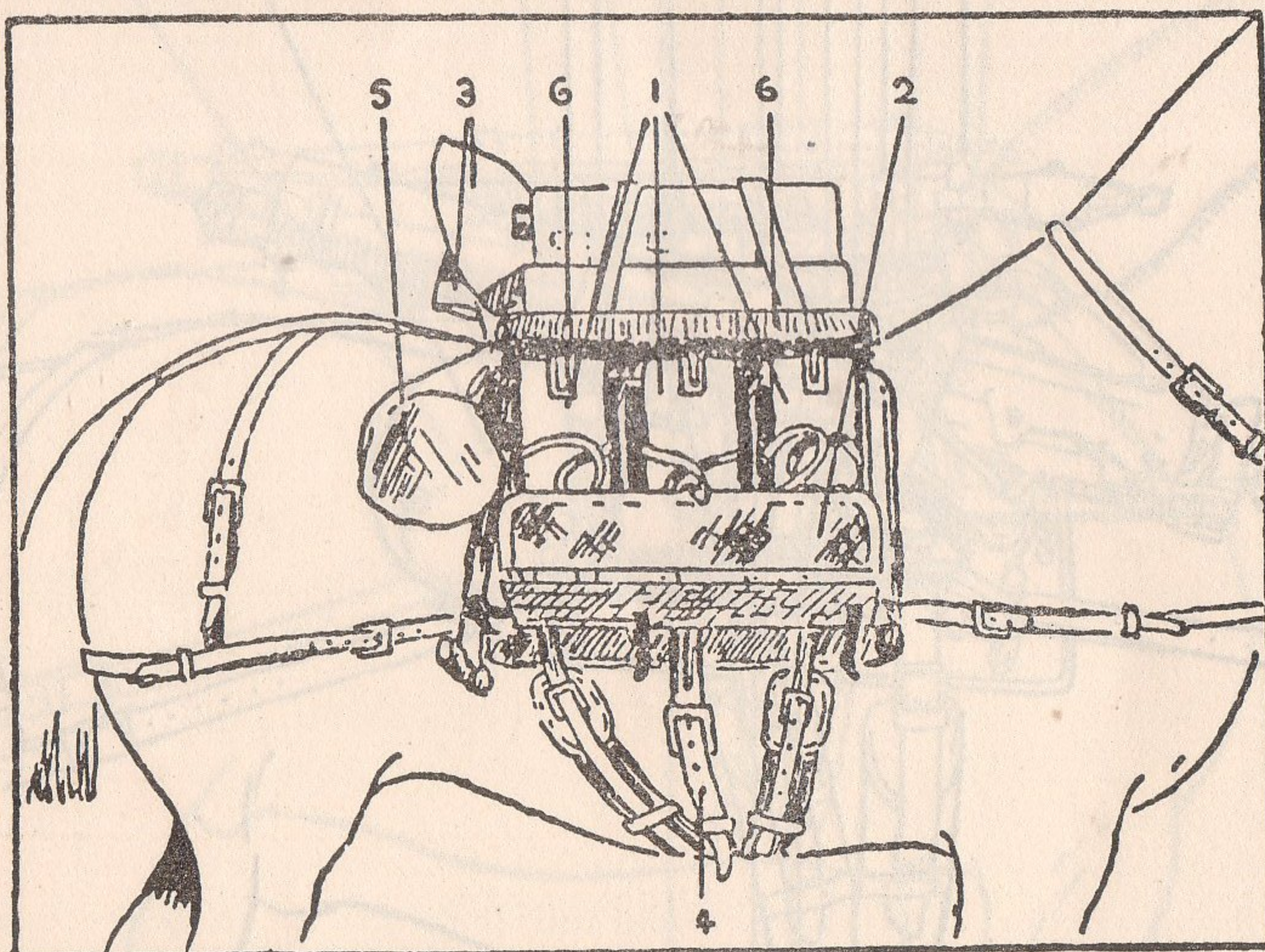
1. Spare barrel in case, resting in bracket of pack saddle.
2. Straps of spare barrel case buckled to the rod connecting the two arches of the pack saddle.
3. Brackets bolted to extension pieces of pack saddle.
4. Rear gun rest.
5. Front suspending pad of gun hanger.
6. V-sling of gun hanger.
7. Gun rest strap brought through the "lay" of the pannel and engaged with the triangular buckle of the V-sling attachment.
8. Crosshead of tripod attached to the gun.
9. Nosebag suspended from rear arch of the pack saddle.
10. Forward gun rest.

PLATE 14

Fig. 3

CAVALRY—FIRST AMMUNITION PACK HORSE

(Off side)



1. Ammunition boxes in ammunition rack.

2. Rack, boxes, ammunition, in belt, Mark III.

3. Shovels, in caps, carried heads upwards and crossed. (For method of crossing, see Plate XV, and for securing, Plate XI.)

4. Girth, leather, secured to ammunition rack.

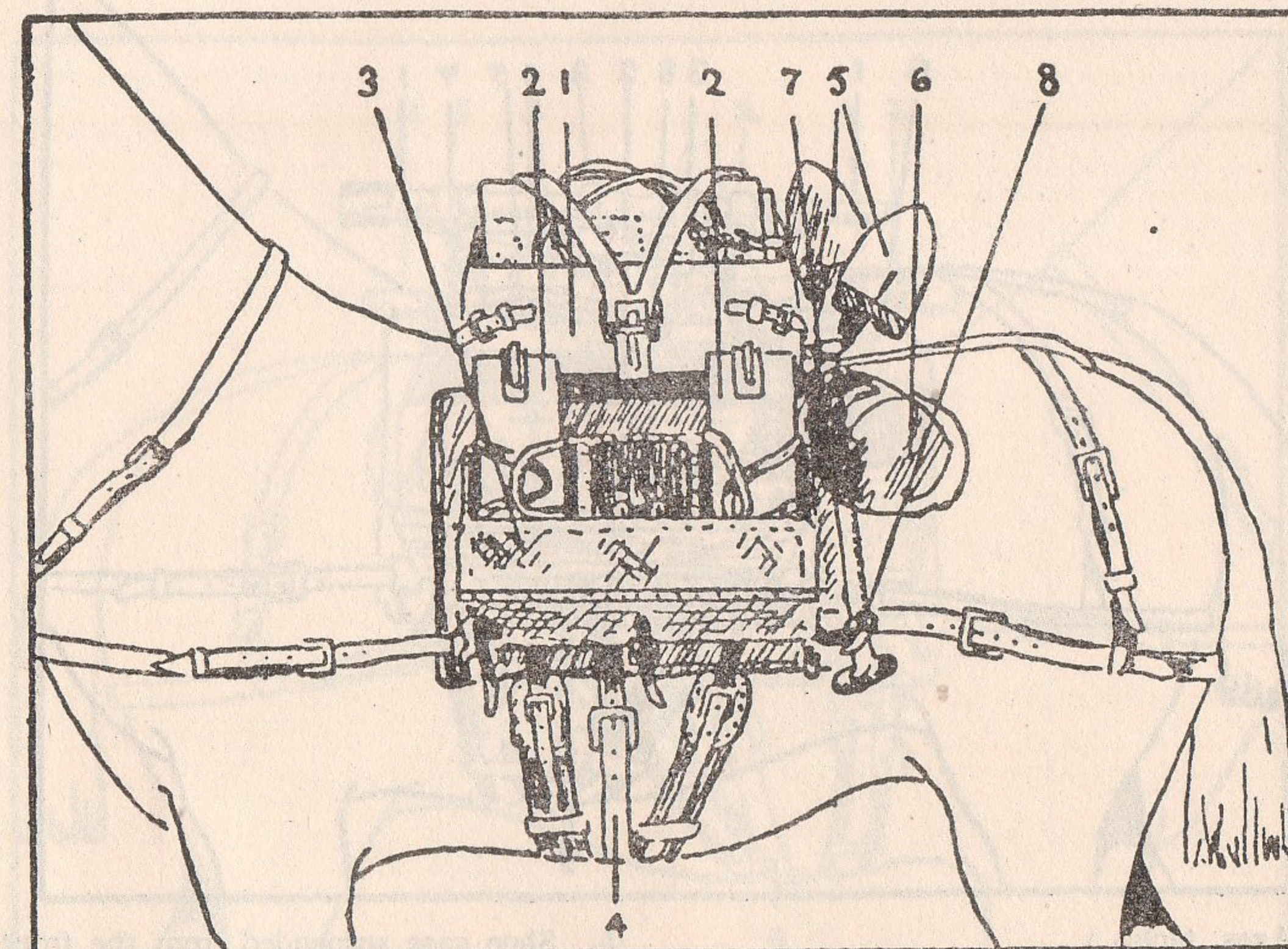
5. Nosebag suspended from rear arch of pack saddle.

6. } Case, can, oil, as seen from the off side.

CAVALRY—FIRST AMMUNITION PACK HORSE

Fig. 4

(Near side)



1. Condenser, in carrier on ammunition rack.

2. } Ammunition belt boxes in ammunition rack.

3. Rack, boxes, ammunition, in belt, Mark III.

4. Girth, leather, buckled to ammunition rack.

5. Shovels, in caps. Carried heads upwards and crossed. (For method of crossing, see Plate XV.)

6. Nosebag suspended from rear arch of pack saddle.

7. Detachable strap of the shovel cap securing the shovel head to the rear arch of the pack saddle.

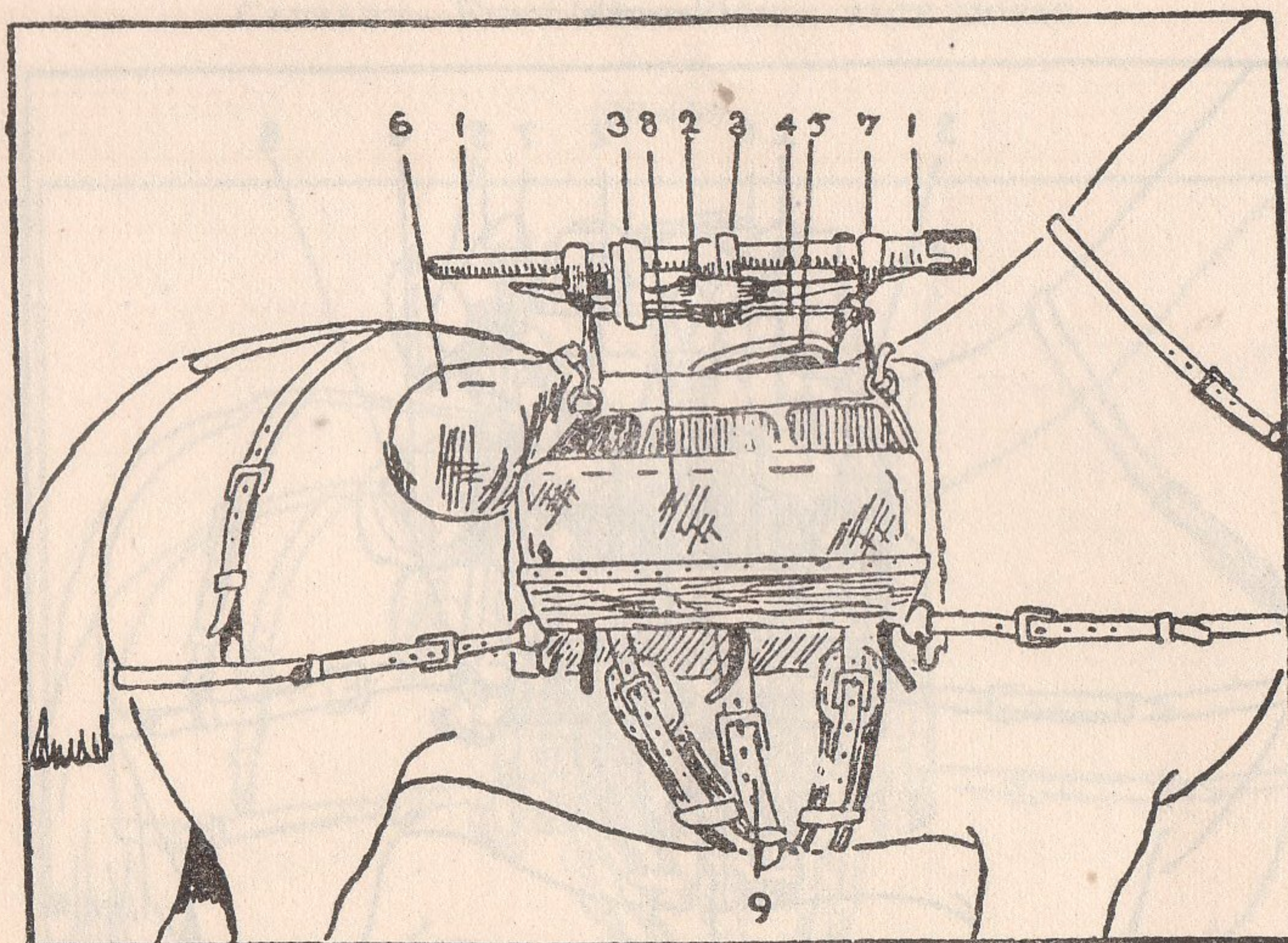
8. Strap, detachable, shovel, looped to link on the pannel and then brought round the shovel handle.

PLATE 14

Fig. 5

CAVALRY—SECOND AMMUNITION PACK HORSE

Showing method of attaching articles enumerated below

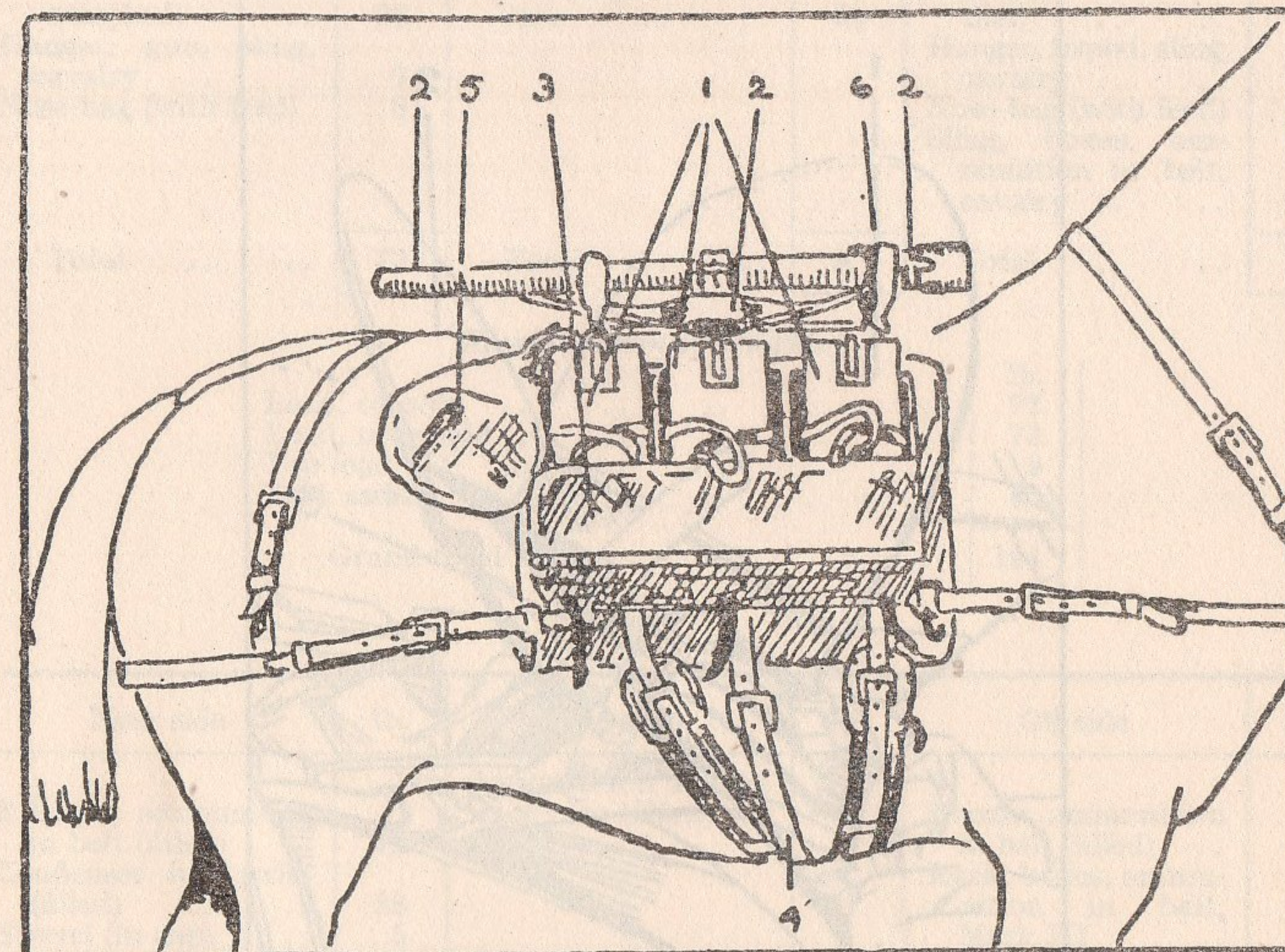


- | | | |
|--|--|---|
| 1. Axes, pick,
1. helve. | } Resting in brackets
of pack saddle. | 5. Shoe case suspended from the front
arch of pack saddle. (This method
obtains also for the first ammunition
horses.) |
| 2. Axes, pick,
2. head. | | |
| <hr/> | | |
| 3. } Straps, detachable, pick and helves,
3. } securing the pick head and helve
3. } to the rod connecting the front and
3. } rear arches of the pack saddle. | | 6. Nosebag suspended from rear arch of
the pack saddle. |
| <hr/> | | |
| 4. Rod connecting the front and rear
arches of the pack saddle. | | 7. Front bracket bolted to extension
piece of the saddle. |
| | | 8. Rack boxes, ammunition, in belt,
Mark III, slung to the hooks of the
pack saddle. |
| | | 9. Girth, leather, buckled to the ammuni-
tion rack. |

CAVALRY—SECOND AMMUNITION PACK HORSE

Fig. 6

(Either side)

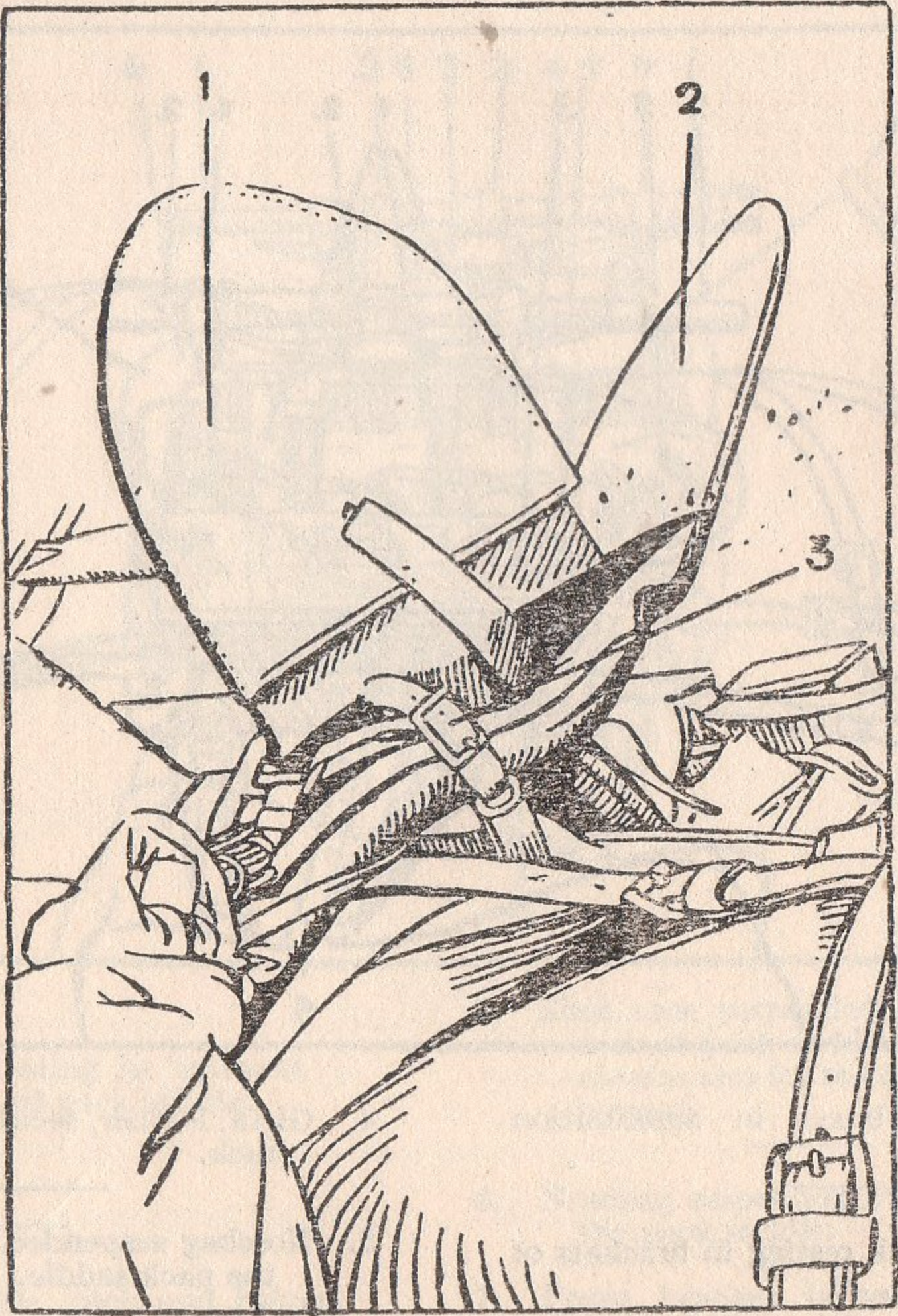


- | | |
|---|---|
| 1. Ammunition boxes in ammunition
rack. | 4. Girth, leather, secured to ammunition
rack. |
| <hr/> | |
| 2. } Helve and pick resting in brackets of
2. } pack saddle. | 5. Nosebag suspended from rear arch of
the pack saddle. |
| <hr/> | |
| 3. Rack, boxes, ammunition, in belt,
Mark III. | 6. Front bracket bolted to extension
piece of pack saddle. |

PLATE 14
PACK SADDLE—CAVALRY

Fig. 7

Showing method of crossing the shovels over the horse's back.



1. Shovel in the shovel cap, placed in position from the off side.
2. Shovel in the shovel cap, placed in position from the near side.

3. Detachable strap of the shovel cap brought round the handle of the shovel below the pan and then secured to the rear arch of the pack saddle. Both shovels are similarly secured.

LOAD TABLES—PACK (CAVALRY)

Near side	lb.	Top load	lb.	Off side	lb.
Gun (with barrel casing filled and tripod crosshead attached) ..	58	GUN HORSE Shoe case (filled) Spare barrel and cleaning rod in case	3½ 5½	Tripod (less cross-head)	36
Hanger, gun, sling, cavalry ..	7			Box (with ammunition)	21
Nose-bag (with feed) ..	8			Hanger, tripod, sling, cavalry	4½
				Nose-bag (with feed)	8
				Sling, boxes, ammunition in belt, cavalry	2½
Total	73	Total	9	Total	72

Recapitulation of Weights

Load, off side	lb.
Load, near side	72
Top load	73
Pack saddle	9
	40
Grand total	194

Near side	lb.	Top load	lb.	Off side	lb.
2 boxes, ammunition in belt (filled) ..	42	1ST AMMUNITION HORSE Shoe case (filled) ..	3½	3 boxes, ammunition in belt (filled) ..	63
Condenser in carrier (filled) ..	28			Rack, boxes, ammunition in belt, Mark III ..	12
Shovel (in cap) ..	5			Shovel (in cap) ..	5
Nose-bag (with feed) ..	8			Nose-bag (with feed) ..	8
Rack, boxes, ammunition in belt, Mark III ..	12			Case, can, oil ..	8
Total	95	Total	3½	Total	96

Recapitulation of Weights

Load, off side	lb.
Load, near side	96
Top load	95
Pack saddle	3½
	40
Grand total	234½

Near side	lb.	Top load	lb.	Off side	lb.
3 boxes, ammunition in belt (filled) ..	63	AMMUNITION HORSE Shoe case (filled) ..	3½	3 boxes, ammunition in belt (filled) ..	63
Rack, boxes, ammunition in belt, Mark III ..	12	Pick and helve ..	8	Rack, boxes, ammunition in belt, Mark III ..	12
Nose-bag (filled) ..	8			Nose-bag (filled) ..	8
Total	83	Total	11½	Total	83

Recapitulation of Weights

Load, off side	lb.
Load, near side	83
Top load	83
Pack saddle	11½
	40
Grand total	217½

SECTION 16.—VISUAL TRAINING.

1. The methods taught in S.A.T., Vol I, Pamphlet No. 2, 1937, Lessons 1 to 9, must be the groundwork of the machine gunner's visual training.

Owing, however, to the fact that machine guns are fired at longer ranges than other small arms, and to the close grouping of the gun, even minor inaccuracies in indication and recognition may result in the target being missed altogether.

Also it is often necessary to fire machine guns under conditions where the safety of our own troops has to be considered and any inaccuracy might endanger them.

For these reasons the methods taught in S.A.T., Vol I, Pamphlet No. 2, are amplified here.

2. Sequence and system of training.

The following will be the sequence of individual instruction:—

i. Officers and N.C.O.'s—

Visual training.

Judging distance up to 1000 yards.

The organisation of the arc, including the use of range cards.

Indication.

Fire Orders.

ii. Gun numbers.—

Visual training.

Judging distance up to 1000 yards.

Recognition.

Application of fire orders.

iii. The rangetakers, scouts and orderlies will require instruction in visual training and elementary indication and recognition on the same lines as for officers and N.C.O.'s

3. Individual instruction of officers and N.C.O.'s—

i. Visual training.—

Attention should be called to those features which are of particular interest to the machine gunner, e.g., positions for observation to the front and to the flanks, positions that offer a good field of fire, areas on which observation of fire is likely to be obtained, localities from which enemy attacks may develop, the visibility of skylines, etc. By such practice a necessary introduction will be obtained to the more detailed study of cover, reconnaissance, and the selection of gun positions.

Practice in the use of glasses should be combined with the above.

ii. The organisation of the arc and range cards.—

Instruction should be given having regard to a tactical situation. Particular attention should be paid to the choice of reference points, to the orders to be given to the range-taker, and to estimating ranges from the key ranges on a range card.

iii. Indication.—

The sequence of instruction will be as laid down in S.A.T., Vol. I, Pamphlet No. 2, the instructional stores and technical methods involved being adapted to machine gun requirements. For example, directors will be used instead of aiming rests.

iv. Fire orders.—

As soon as a satisfactory standard of indication has been reached, officers and N.C.O.'s will be practised in giving out fire orders for various targets. Landscape targets may be used in the preliminary stages. Examples of direct fire orders will be found in Pamphlet No. 7, Part III, Sec. 24.

During the later stages of training the time taken to give out the fire order will be noted, and when necessary, it will be pointed out where time could be saved. This will be of particular importance in the engagement of moving targets.

The details of fire discipline in connection with fire orders is practised in Section Drill—Direct Fire (Sec. 17, Lesson 68).

4. Individual instruction of gun numbers.—

i. Visual training.—

As in S.A.T., Vol. I, Pamphlet No. 2, extended to suit machine gun requirements.

ii. Judging distance up to 1000 yards.—

All ranks will be taught to judge distances up to 1000 yards. The method and sequence of instruction will be as laid down in S.A.T., Vol. I, Pamphlet No. 2.

iii. Recognition.—Instruction in recognition must only be given by N.C.O.'s who have reached a high standard of indication.

The sequence of instruction will be as laid down in S.A.T., Vol. I, Pamphlet No. 2, landscape targets or the miniature range being used in the preliminary stages.

During this instruction the Nos. 1 will be at the guns, and on the conclusion of the indication will be ordered to lay on the point of aim indicated. The instructor will check the point of aim. Not more than four guns should be used at one time by one instructor.

iv. Fire Orders.—As soon as a satisfactory standard of recognition has been reached, the men will be practised individually in the detail of applying fire orders to the gun.

LESSON 62.—INDICATION AND RECOGNITION (WITHOUT AIDS).

Instructor's Note

Stores:—

Gun, tripod, landscape target. The landscape target can be used, but every opportunity should be taken at practising on the ground.

1. **The arc of fire.**—Explain that the area of ground to be watched, and within which targets will be engaged, is known as the "arc of fire."

The arc is bounded by the "right of arc" and "left of arc," each limit being an imaginary line passing through the gun position and some easily described point on the landscape in the direction required. Similarly, an imaginary line, known as the "near limit of arc," can be described from right to left across the arc to indicate that only the ground beyond this line and within the limits mentioned above need be considered.

2. Demonstrate how, whenever possible, the gun itself will be laid on to the point to be recognised. This is the simplest and most direct method of indication.

Explain how an instrument, for example a director, or "pointer" can also be used.

Explain that the approximate right, centre, or left of arc can be of great assistance to denote a general direction, viz.:—

"Right of arc—White house." "Centre of arc—Bright yellow patch."

3. Practise the squad in indication (officers and N.C.O.'s only) and recognition by the above means, insisting on an accurate aim every time the gun is laid.

LESSON 63.—INDICATION AND RECOGNITION (WITH AIDS).

Instructor's Note

Stores:—

Gun, tripod, graticuled glasses, slide rule, degree scale painted on the wall (or portable degree scale—see Pamphlet No. 2, Lesson 6).

Use a landscape target if necessary, but preferably practise on the ground.

REFERENCE POINTS.

1. Explain that:—

i. Reference points in a machine gun arc may be as far apart as 30 degrees. In deciding on the number of reference points, the objects to be employed, and their distance apart and from the guns, the fire controller must

consider the nature of the arc of fire and his task. As a general rule, as few as possible should be used, so as to avoid confusion.

- ii. They should be in the areas where targets may be expected to appear. When the enemy is tied to definite lines of approach, or moving targets are likely, it may be necessary to choose a few reference points close together to facilitate rapid switching.
- iii. The points originally used for describing the right or left of arc should not be employed as reference points unless specially named as such.

2. Practise (officers and N.C.O.'s only) in the selection of reference points in accordance with the above considerations.

DEGREE METHOD.

3. The squad must first know their own hand angles (S.A.T., Vol. I, Pamphlet No. 2, 1937, Lesson 6).

4. Explain that:—

When it is necessary to give out angles the following form will be followed:—

4° 35'—Four degrees three five minutes.

12° 5'—One two degrees five minutes.

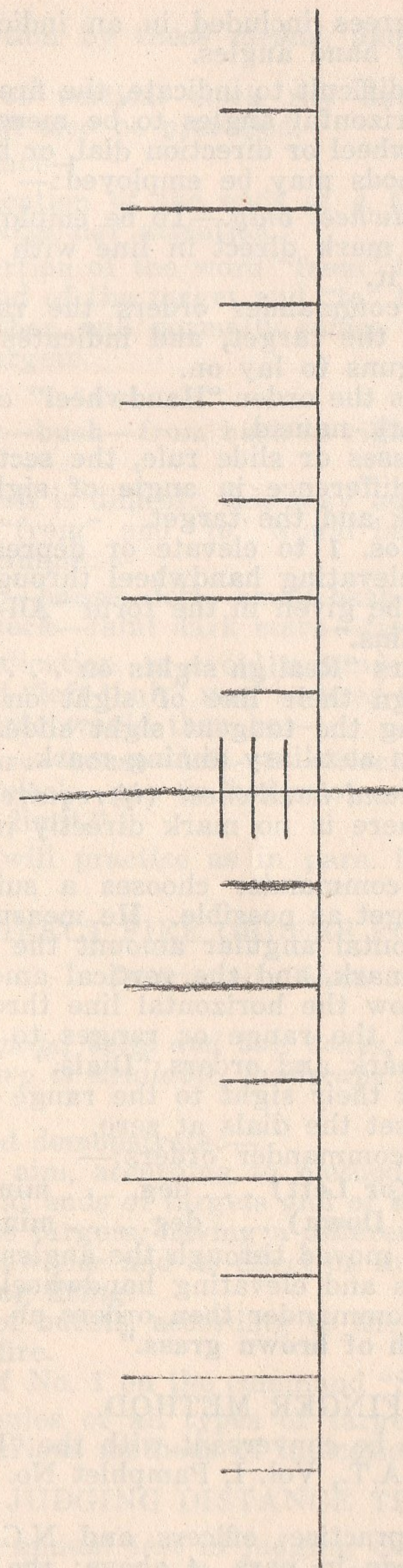
10° 20'—One owe degrees two owe minutes.*

The words "right" or "left" or "elevation" or "depression," will precede the number of degrees or minutes, when required.

*In all examples this form of phonetic spelling is used to represent the figure "0."

i. Fire controllers should measure horizontal and vertical angles by means of the graticules in their field glasses or slide rule. If for any other reason it is necessary for them to use hand angles, it should be remembered that they will normally be in the lying position. Therefore, when their individual hand angles are being determined, these should also be checked lying down.

The following figure is an example of a graticule on service field glasses. The central line measuring $1\frac{1}{2}$ degrees above the horizontal and a half degree below, the remaining vertical lines showing a measurement of a degree and a half degree alternately in height and a lateral measurement of the same amount respectively. The three horizontal bars are marked at 10 minutes depth from each other.



NOTE.—Whenever graticules are inserted in service field glasses, the angular measurement is shown on the body of the instrument frame.

ii. At the gun, degrees included in an indication will normally be measured by hand angles.

iii. If the target is difficult to indicate, the fire controller may order vertical and horizontal angles to be measured by means of the elevating handwheel or direction dial, or both.

The following methods may be employed:—

(a) *Using the handwheel only.*—To be employed when there is a prominent mark direct in line with the target, but above or below it.

The section commander orders the range or ranges required to hit the target, and indicates the prominent mark for the guns to lay on.

He then gives the order "**Handwheel**" on which Nos. 1 lay on the mark named.

With his glasses or slide rule, the section commander measures the difference in angle of sight between the prominent mark and the target.

He orders Nos. 1 to elevate or depress the guns by means of the elevating handwheel through this amount. The order will be given in the form "**All—up (or down) . . . deg. . . . mins.**"

He then orders "**Realign sights on . . .**"

Nos. 1 realign their line of sight on the prominent mark by moving the tangent sight slide. The mark is then used as an auxiliary aiming mark.

(b) *Using the dial and handwheel (if required).*—To be employed when there is no mark directly in line with the target.

The section commander chooses a suitable mark as close to the target as possible. He measures with grati- cules the horizontal angular amount the target is right or left of the mark, and the vertical amount the target is above or below the horizontal line through the mark.

He gives out the range or ranges to hit the target, indicates the mark and orders "**Dials.**"

Nos. 1 adjust their sight to the range and lay on the mark. Nos. 2 set the dials at zero.

The section commander orders:—

"**All—Right (or Left) . . . deg. . . . mins.**"

"**All—Up (or Down) . . . deg. . . . mins.**"

The guns are moved through the angles ordered by the use of the dials and elevating handwheel respectively.

The section commander then orders an actual point of aim, e.g., "**patch of brown grass.**"

FINGER METHOD.

All ranks must also be conversant with the "Finger" method of indication. (See S.A.T., Vol. I, Pamphlet No. 2, 1937, Lesson 6.)

5. The class will practise, officers and N.C.O.'s indicating targets by the methods in para. 4 above; the men will only

practise recognition by these means, and laying the guns as ordered.

Combination of vertical clock ray and degree and finger measurement will also be practised.

6. Explain that:—

- i. The indication of the ends of a target with width requires particular attention.
- ii. The insertion of the word "**from**" before the description of one end of the target and "**to**" before the description of the other, will normally suffice to indicate the limits of the targets.

Example:—

"**Centre of arc—bush—from bush to right—five o'clock—three degrees—tree.**"

If the indication is difficult, this may not always be possible, and the words "**from**" and "**to**" would have to be used as in the following example:—

"**Centre of arc—house—left—small bush—left—gap in hedge—row—left—7 o'clock—faint dark mark—from bush to mark.**"

In such an indication, to avoid misunderstanding, the words "**right limit**" and "**left limit**" may be used to indicate the flanks. The above example would then be:—

"**Centre of arc—house—left—9 o'clock—small bush—right limit—left—9 o'clock—gap in hedgerow—left—7 o'clock—faint dark mark—left limit.**"

7. The class will practise as in para. 5 above.

LESSON 64.—DIRECT FIRE ORDERS FOR GUN NUMBERS.

Instructor's Note

Stores:—

Two guns, tripods, belts and belt boxes, drill cartridges, and, if no open country is available, landscape target. Field glasses or slide rule.

1. Explain and demonstrate:—

- i. Point of aim, according to method of fire.
- ii. Overlap at ends of targets and of beaten zones in centre of oblique targets, having a different range to each end.
- iii. Wind allowance and its effect on the point of aim before and during firing.
- iv. Length of bursts, according to the range.
- v. Rate of fire.
- vi. Action of No. 1 on the command "**Stop.**"

2. Take examples of all types of targets, including moving targets, using various methods of indication.

JUDGING DISTANCE TEST.

Details of the annual test in judging distance are set out in Sec. 3, Pamphlet No. 2, S.A.T., Vol. I, 1937.

SECTION 17.—SECTION DRILL—DIRECT FIRE.

*Instructor's Notes**Stores:—*

For all periods of section drill, the following stores are required:—

Two guns, two tripods, two condenser cans, two condenser tubes (dummy), two spare parts cases, at least 10 belt boxes, belts, and drill cartridges. The spare parts box (where the method of carriage is suitable) will also be required. Barrel casings and condenser cans will be filled and belt boxes, if possible, made up to service weight by improvised means. When additional stores are required, a note to that effect will be found under the heading of each lesson.

1. Signals and Lesson 57 of Advanced Machine Gun Handling must be taught before commencing Section Drill (see Secs. 13 and 14).

2. As proficiency is attained the drill will be practised introducing cover. This cover can be natural or created artificially with small screens, chairs covered with ground sheets, etc. The direction of enemy observation will be indicated.

3. The object of section drill is to teach and exercise the section personnel in their duties as a fire unit employing direct fire.

4. Beginning of drill.—Before the drill begins the instructor will fall the section in, detail a section corporal and gun numbers. (Where the instructor himself is not acting as section commander, he will detail a section commander in addition.) He will inform the section corporal where the vehicle (or horses) is to be sent when the required stores have been removed and reported correct. (For drill purposes this need only be a short distance in rear.)

LESSON 65.—PREPARE FOR ACTION AND COME INTO ACTION.

*Infantry Limber.**Additional stores:—*

Fore portion of limber with support for pole if horses not present. Two gun chests, limber cover. Stores packed in limber and cover secured.

*Section commander (instructor).—**"Fall in."*

The section will assemble in two ranks, 5 paces in front of the leading horses (or limber pole, if horses are not present), the section corporal taking up his position a few paces in front of the centre of the section. The section commander orders the section corporal to take charge, himself moving to the position where the section is to come into action.

*Section corporal.—**"Section—Attention."*

*"Tell off by sub-sections."—Nos. 1 report "No. 1 sub-section."
"No. 2 sub-section."*

"Section, Number"—the leading sub-section will act as in squad drill.

Section corporal.—

". . . belts, prepare for action."

The front rank turn to the right, the rear rank to the left and double smartly to their positions at the limber as follows:—Nos. 1, at the rear of the limber, Nos. 2, at the rear corners of the limber, Nos. 3, at the front corners, Nos. 4, at the forward side of the limber, but not so as to inconvenience Nos. 3 or to alarm the wheel horses (if present). All numbers face inwards to the limber. Odd numbered sub-section on the off side, even sub-section on the near. All numbers assist to unfasten the cover which is then passed back to Nos. 1 who place it on the perch pole (or ground, if pole not fitted). The section corporal will place himself where he can best supervise the actions of the gun numbers and direct their movement from the limber. Nos. 5 (if present) will move to a position a few paces in rear of the limber.

Nos. 1 remove their tripods and condenser tubes from the limber and double out to the positions indicated on the ground by the section corporal. On arrival, they place the tripod on the ground and take up their normal position on its left, holding the tube ready to hand to Nos. 2 when they arrive.

Nos. 2, assisted by their Nos. 3, remove their gun chest and place it on the ground at the side of the limber, open the chest and remove the gun. Whilst doing so the Nos. 3 will remove the spare parts case and place the strap over the right shoulder of their No. 2 who will then double forward and take up his position a few paces on the right of his No. 1. He will then receive the condenser tube from No. 1 and attach it to the gun.

Nos. 3, as soon as they have supplied Nos. 2 with the spare parts case, will remove the condenser can and two belt boxes and will double out to a suitable position close in rear of their respective Nos. 1 and 2 as in Emergency Gun Drill.

Nos. 4, as soon as opportunity offers, remove the remaining belt boxes ordered and carry them forward to their Nos. 3 (making as many trips as are necessary). They will then return to a central position in rear of the section and await orders from the section corporal.

Nos. 5 (if present) will, immediately all gear required is removed from the limber, close the gun chests, replace them in the limber and replace and fasten the limber cover. Should more than 6 boxes have been ordered, Nos. 5 will assist Nos. 4 to remove the necessary ammunition from the limber.

(Should Nos. 5 not be present, Nos. 4 will remove the ammunition from the limber, fasten and replace the gun chests and

put on the limber cover. They will then carry out their ammunition duties.)

The section corporal will give orders to the limber driver as to the move, route, return, etc., and will detail a No. 5 (or No. 4, if Nos. 5 not present) to act as brakesman. The remaining No. 5 (or No. 4) awaiting the orders of the section corporal.

The section corporal will take up his position a few paces in front of the centre of the section. The gun numbers will examine their stores as in Emergency Gun Drill, Nos. 1 reporting "No. . . . All Correct" (or otherwise) to the corporal on completion.

On receipt of reports from sub-sections, the section corporal will signal the limber driver to move.

The section commander indicates positions where the guns are to be mounted and the direction in which they will point.

Section commander.—

"Action."

Nos. 1, 2 and 3 will mount the guns on the positions indicated in accordance with the detail for action in Emergency Gun Drill. Nos. 3 making the necessary journeys to place all ammunition at the guns, finally being positioned by the section corporal.

The section corporal will then position the remaining numbers on a suitable chain of supply to the limber, himself taking up a position where he can best supervise the work behind the section position.

NOTES.—It should be made clear to the personnel that in applying the drill principles to field training, certain modifications are necessary, e.g.:—

All numbers must be prepared to assume their correct positions at the limber without any preliminary assembly and under all conditions.

After ascertaining that the stores with each sub-section are correct, the section corporal will move the personnel and stores to establish contact with the section commander at the selected position.

After positioning the Nos. 3, the section corporal will report to the section commander and be given details of the tactical situation, before moving to the rear to establish the chain of supply.

Cavalry Pack.

Additional stores:—

Riding and pack horses. Packsaddlery assembled and all gear loaded on packs.

Section commander (instructor).—

The section commander orders the section corporal to take charge, himself moving to the position where the section is to come into action.

Section corporal.—

" . . . belts, prepare for action, dismount."

Section corporal, Nos. 1, 2, 3 and 4 of each sub-section dismount and hand over their horses to the pack leaders in the normal way.

Nos. 1 double to the off side of the gun packs, remove the tripods from the packs and carrying them in the most convenient manner, double out to positions indicated on the ground by the section corporal. On arrival, they place the tripod on the ground and take up their normal position on its left.

Nos. 2 double to the near side of the gun packs, remove the guns from the packs, turn to the right and move around the rear of the gun packhorses where they receive the condenser tube from their Nos. 4, finally moving to their positions a few paces on the right of their Nos. 1 placing the gun on the ground, attaching the condenser tube and assuming their position on the right of the gun.

Nos. 3 double to the off side of the first ammunition packs, undo the quick releases on the ammunition racks and remove the two outside belt boxes. They receive the condenser can from their Nos. 4 and double out to a suitable position close in rear of their respective Nos. 1 and 2 as in Emergency Gun Drill.

Nos. 4 double to the near side of the first ammunition packs, undo the condenser carrier quick releases and remove the condenser cans and condenser tubes. They move in rear of the gun packs and hand the tubes to their respective Nos. 2, placing the condenser cans in the most convenient position for their Nos. 3. They then return to the ammunition packs, undo the quick releases and remove the remaining belt boxes ordered, conveying them to their respective No. 3's position. On completion, they return to a central position in rear of the section and await orders from the section corporal.

The section corporal will give orders to the senior mounted number as to the move, route, return, etc., of the led horses and will take up his position in front of the centre of the section.

The gun numbers will examine their stores as in Emergency Gun Drill, Nos. 1 reporting "No. . . . All Correct" (or otherwise) to the corporal on completion.

On receipt of reports from subsections, the section corporal will signal the led horses to be moved.

The section commander indicates positions where the guns are to be mounted and the direction in which they are to point.

Section commander (instructor).—

"Action."

Nos. 1, 2 and 3 will mount the guns on the positions indicated, in accordance with the detail for action in Emergency Gun Drill. Nos. 3 making the necessary journeys to place all ammunition at the guns, finally being positioned by the section corporal.

The section corporal will then position Nos. 4 on a suitable chain of supply to the led horses, himself taking up a position where he can best supervise the work behind the section position.

NOTES.—It should be made clear to the personnel that in applying the drill principles to field training, certain modifications are necessary, e.g.:—

After ascertaining that the stores with each sub-section are correct, the section corporal will move the personnel and stores to establish contact with the section commander at the selected position.

After positioning the Nos. 3, the section corporal will report to the section commander and be given details of the tactical situation, before moving to the rear to establish the chain of supply.

LESSON 66.—CEASE FIRING AND ON LIMBER (MOUNT).

Infantry Limber.

Section commander signals "H" for limbers. When section corporal acknowledges, he orders "Cease Firing."

Nos. 1, 2 and 3 act as in Emergency Gun Drill. Nos. 3 making as many journeys as are necessary to remove their stores from the gun position.

The limber, under the orders of the section corporal, moves to a position immediately in rear of the section position, accompanied by Nos. 4 and 5.

Nos. 4 and 5 remove the cover from the fore part of the limber, throw it back on the perch, remove gun chests and place them open on the ground at the sides of the limber and square off the remaining articles on the limber floor. Nos. 4 are then sent by the section corporal to positions a short distance in rear of their respective Nos. 3.

Section commander.—

"On Limber."

Nos. 1 double to the limber with their tripods. As soon as the floor portion is packed they place in their tripods, collect their condenser tubes from Nos. 2, place them in the limber and fall in.

Nos. 2 double to the limber with their guns. On arrival they detach the condenser tubes and place them on the ground in a convenient position for Nos. 1. They replace the guns in the chests and, with the assistance of Nos. 3, replace the chests in the limber. Nos. 2 replace their spare parts cases in the limber and, assisted by Nos. 3, when all gear has been returned to the limber, replace and fasten the limber cover before falling in.

Nos. 3 double to the limber with the condenser can and as many belt boxes as they can conveniently handle. On arrival, they replace the belt boxes in the limber, assist Nos. 2 to replace the gun chests, replace their condenser cans and assist Nos. 2 in the replacement and securing of the limber cover before falling in.

Nos. 4 double to the position of their Nos. 3 and carry back any belt boxes remaining to the limber. On arrival, they pack the floor portion and fall in.

Nos. 5 assist, if necessary, to pack the floor portion. Should aiming posts, clinometers and bar foresights have been in use, they will collect them from their Nos. 3 and 2 and replace them in the hind portion of the limber before falling in.

The section corporal will supervise the return of stores and the packing of the limber. He may despatch Nos. 5 to assist Nos. 3 and 4 in the return of their stores should the nature of the action render it necessary.

Should Nos. 5 not be present, Nos. 4 will carry out the duties of those numbers in addition to their own.

NOTE.—The section commander may order "Cease Firing" before signalling for the limber. Should aiming posts have been planted, the orders "Unload, Clear Guns" must precede "Cease Firing."

Cavalry Pack.

Section commander signals for led horses. When the section corporal acknowledges, he orders—"Cease Firing."

Nos. 1, 2 and 3 act as in Emergency Gun Drill. In addition, Nos. 2 remove the condenser tubes from their guns. Nos. 3 making as many journeys as are necessary to remove their stores from their gun's position.

Nos. 4 are sent by the section corporal to No. 3's positions.

Section commander.—

"Mount."

Nos. 1 double to the off side of their gun packs with their tripods and replace them on the packs, ensure that the load is secure then move their horses and mount.

Nos. 2 double to the near side of their gun packs with their guns and condenser tubes. They hand the condenser tubes to their Nos. 4 and replace the guns on the packs, ensure that the load is secure, then move to their horses and mount.

Nos. 3 and 4 double to the ammunition packs, with the condenser cans and belt boxes. They replace their stores on the packs, Nos. 4 receiving the condenser tubes from their Nos. 2 and replacing them, with the condenser cans, in the carriers. When loads are secure, both numbers move to their horses and mount.

Section corporal will supervise the return and packing of the stores on the packs, assisting as necessary. When satisfied that all stores are correct and secured he will move to his horse and mount.

NOTE.—The section commander may order "Cease Firing" before signalling for the led horses.

If the section commander gives the command "Cease Firing" immediately followed by "Mount," the teams do not lie down in the "Cease Firing" position but as soon as the guns are dismounted all move back and replace their stores on the packs and mount.

Normally, the signal for the bringing up of the led horses should be so timed that they arrive as close in rear of the section position as the situation will permit, immediately before the teams are ready to replace the stores on the packs.

Should aiming posts have been planted, the orders "Unload, Clear Guns" must precede "Cease Firing."

LESSON 67.—LONG CARRY.

Additional stores:—

Extra belt boxes.

When the section position is an appreciable distance from the position in readiness, the section corporal will detail loads throughout the section utilising any numbers available. Nos. 4 will return for any belt boxes which cannot be carried in the first journey.

The section corporal will lead the section to a suitable position, personnel remaining in the open formation and carrying the loads as suggested in Advanced Machine Gun Handling, Stage 1.

On completion of the long carry all belt boxes will be placed with Nos. 3, Nos. 4 remaining together, a short distance in rear of the centre of the section, awaiting the orders of the section corporal. No. 5, if present, will remain with them.

LESSON 68.—FIRE DISCIPLINE.

Additional stores:—

Landscape target, if open country not available.

Before carrying out this stage of the drill the men must have had sufficient instruction in receiving fire orders—direct fire.

The section commander (instructor) will detail an arc of fire and reference points before the guns are brought into action.

When a satisfactory standard has been reached, the section should be exercised with the fire controller on the right of, or between the guns, a No. 3 being utilised, if desired, as a connecting file for signals.

Practice of fire orders in all forms, including the allowance for side wind, is an essential part of this drill, particular attention being paid to all points of fire discipline, e.g., adjustment of sights, checking of aim and actions of gun numbers, etc.

LESSON 69.—THE REPLACEMENT OF BREAKAGES.

1. Where the spare required is carried in the spare parts case at the gun.

No. 1 calls for the necessary store to replace the breakage.

No. 2 replaces the broken component from the spare parts case. If a lock is broken and repairable he will call for No. 3 and hand it and the wallet to him on his arrival.

No. 3 will carry out the necessary repair under cover and return the repaired lock and wallet to No. 2 at the first opportunity, acquainting the section corporal of the nature of the repair. In all cases the broken part will be retained.

2. Where the spare part required is not carried in the spare parts case at the gun.

No. 1 calls for the necessary store as above.

No. 2 notifies No. 3, who in turn passes the order to the next number in the chain of supply. The article required is passed up the chain of supply from the limber to No. 3 who brings it to the gun position, secures the broken part from No. 2 and passes it to the next number on the chain for return to the limber.

The section corporal is responsible that broken parts are replaced immediately the situation allows.

NOTES.—Para. 2 above, with the exception of changing a barrel, will not apply to Light Horse with M.G. pack equipment until arrangements are introduced for the carriage of the spare parts box or a substitute therefore arranged.

When considerable stripping of the gun is necessary, e.g., changing a barrel, Nos. 1 and 2 should pay due regard to cover, withdrawing the gun and tripod behind existing cover when such is available in the close vicinity.

LESSON 70.—TO CONTINUE FIRING IN THE EVENT OF THE TARGET BECOMING OBSCURED.

Additional stores:—

Clinometers, bar foresights and aiming posts—1 per gun.

Two dial sights. One aiming post.

1. When the target is likely to be obscured for a short time only (dust, smoke, etc.):—

Section commander.—

"Stop—Pick up Gun Aiming Marks."

No. 1 stops firing, relays on his original point of aim and picks up a gun aiming mark on that line without disturbing the gun's line or elevation.

No. 2 sets the direction dial at zero when the gun is laid. He then looks over the sights and identifies the gun aiming mark.

Both Nos. 1 and 2 should memorise the setting of the tangent sight slide.

Section commander gives necessary orders for resumption of fire, including if necessary, the amount of tapping in the case of wide targets. When the period of obscuration is considered to have passed the section commander will engage the target by direct means.

2. When the target is likely to be obscured for a long time (heavy smoke, fog, dusk, etc.):—

Section commander orders gun aiming marks to be picked up as above. He then orders—"Indirect Fire Equipment."

This order is repeated by Nos. 3 to the next number on the chain of supply.

Clinometers, bar foresights and aiming posts are withdrawn from the hind portion of the limber and passed along the chain of supply until they reach No. 4 of the odd-numbered subsection who delivers them to each No. 3.

Nos. 3 move forward and hand the clinometers and bar foresights to their Nos. 2 and retain the aiming post at their own position.

At the first opportunity, the section commander orders—
“Stop”—“Check Elevation.”

Nos. 1 stop firing and relay on the gun aiming mark.

Nos. 2 check that the direction dial is set at zero when the gun is laid, and, placing the clinometer on the gun, register the gun's elevation by adjusting the clinometer until the bubble is central. Nos. 1 retaining correct holding.

Section commander.—“Unload”—“Clear Guns.”

Nos. 1 and 2 act as in Emergency Gun Drill, reporting on conclusion.

Section commander.—“Out Aiming Posts.”

Nos. 1 close the rear cover and set the slide to 2,500. Nos. 3, carrying the aiming post, move forward to the guns and look over the sights to determine the position for the aiming mark, then move out and plant the post under the direction of Nos. 1, returning to their original position on completion.

Section commander gives necessary orders for loading and resumption of fire, including the amount of tapping in the case of wide targets (if necessary).

NOTE.—In the case of light horse pack equipment, the section corporal will make the necessary arrangements for the collection of indirect fire equipment from the led horse position, e.g., by sending a No. 4 back.

No. 3 passes the order back to No. 4. Nos. 4 remove dial sights and one aiming post from the limber, No. 4 of the odd-numbered sub-section bringing them to Nos. 3, handing the aiming post to No. 3 of the odd-numbered sub-section.

At the first opportunity the section commander orders—
“Stop”—“Check Elevation.”

Nos. 1 stop firing.

Nos. 3 hand the dial sights to Nos. 1.

Nos. 1 attach the dial sights to the guns and check to see that the dial and deflection drums are at zero. They then relay on the gun aiming mark using the tangent sight. (The tangent sight will then be lowered.)

Nos. 2 check that the direction dial on the tripod is set at zero.

Nos. 1 set the range being used to engage the target on the range drum and then level the bubble by means of the angle of sight drum.

Section commander.—“Unload”—“Clear Guns.”

Nos. 1 and 2 act as in Emergency Gun Drill, reporting on completion.

Section commander.—“Out Aiming Post.”

No. 1 closes the rear cover.

No. 3 puts out the aiming post centrally about 15 yards in front of the guns.

Nos. 1 align the collimators on the aiming post.

Section commander gives necessary orders for loading and resumption of fire.

LESSON 71.—TO MAKE PREPARATION IN DAYLIGHT TO CONTINUE FIRING IN DARKNESS.

Additional stores:—

Clinometers, bar foresights, aiming posts—1 per gun. Night firing box, with night sights and torches.

Two dial sights, one aiming post, two torches, one aiming lamp.

Section commander sends for the section corporal, No. 4 of the odd-numbered sub-section and any night firing stores which are not already at the section position. The section corporal and No. 4 move to a position in the centre and slightly in rear of the Nos. 3.

Section commander.—“Prepare for Night Firing.”

Section commander takes post at No. 1 gun, the section corporal at No. 2 gun.

Nos. 1 relay on the target (on aiming post if using indirect fire equipment).

Nos. 2 set the direction dial at zero, place the clinometer on the gun, register the gun's elevation and attach the bar foresight, kneeling at the right side of the gun on completion. (Nos. 1 remove hands from traversing handles whilst bar foresights are being attached by Nos. 2.)

No. 4 brings the night firing box to a central position between the guns, places it on the ground, extracts the night sights and goes to each gun in turn, handing a torch to the N.C.O. and a set of night sights to the No. 2. He returns to the box and lies down in rear of it.

Nos. 2 fix the night sights and the section corporal reports to the section commander, **“No. 2 Ready.”**

Section commander.—“Unload—Clear Guns.”

Nos. 1 and 2 act as in Emergency Gun Drill, the section corporal reporting to Nos. 2 gun.

Section commander.—“Out Aiming Lamps.”

Nos. 3 move to the night firing box, receive an aiming lamp each from No. 4 and move out in front of the guns, taking with them an aiming post if not already planted. They should hold the cable in one hand and the lamp (or post) in the other, so as to avoid strain on the terminals. They plant the aiming lamps under the direction of Nos. 1 and return by the flanks,

reporting to the section commander when in, e.g., "No. 3 of No. . . . In."

NOTE.—N.C.O.'s will check the aim on the lamp before ordering Nos. 3 to come in.

Section commander orders "Load" and "Fire" as required.

DIRECT FIRE.

Nos. 1 relay on the target and lower the tangent sights.

Nos. 2 set the direction dial on the tripod at zero.

No. 4 of the odd-numbered sub-section brings up the night firing stores, and hands—

One torch each to the section commander and section corporal.

The dial sights to Nos. 3 and the aiming lamp and the aiming post to the No. 3 of the odd-numbered sub-section. Nos. 3 hand the dial sights to Nos. 1.

Nos. 1 place the dial sight on the guns, ensure that it is set at zero, set the range (from the tangent sight) on the range drum and then level the bubble by means of the angle of sight drum.

Section commander.—"Unload"—"Clear Guns."

Nos. 1 and 2 act as in Emergency Gun Drill, the section corporal reporting for No. 2 gun.

Section commander.—"Out Aiming Lamp."

Nos. 1 close the rear covers. No. 3 of the odd-numbered sub-section will put out the aiming post centrally in front of the two guns, place on the aiming lamp, secure the box, attach the line to the switch and bring the reel back to the section commander.

Nos. 1 align the collimator on the lamp.

Section commander orders "Load" and "Fire" as required.

INDIRECT FIRE.

Nos. 1 relay on the aiming post and after No. 3 has attached the lamp, etc., as for direct fire, Nos. 1 align the collimator on the aiming lamp.

NOTE.—The above procedure will apply to light horse with pack equipment whenever arrangements allow of night firing equipment being carried.

LESSON 72.—TO CHANGE FROM NIGHT FIRING TO DIRECT FIRE.

Additional stores:—

Clinometers, bar foresights, aiming posts—1 per gun. Night firing box, with night sights and torches.

Two dial sights, one aiming post, two torches, one aiming lamp.

Section commander.—

"Prepare for direct Fire"—"Unload"—"Clear Guns."

Nos. 1 and 2 act as in Emergency Gun Drill, the section corporal reporting for No. 2 gun.

Section commander.—

"In Aiming Lamps."

Nos. 1 remove night backsights and hand them to Nos. 2.

Nos. 2 remove the night foresight and bars foresight.

Nos. 3 move out around the flanks to the aiming posts, they pick up the aiming post, holding the cable in the other hand to avoid strain on the terminals. If the lights are on, No. 4 switches them off. As Nos. 3 move in, No. 4 winds in the cable. He should hold the body of the box between his knees, turn the handle with his right hand and with his left hand lead the two cables regularly across the drum. Regularity in winding is essential. On arrival at the box Nos. 3 remove the lamp from the aiming post and hand it to No. 4 who replaces it in the box, closes the box and restores the folding handle to its slot. Nos. 3 return to their original position with the aiming post.

No. 4 collects the night sights from each No. 2 and a torch from each N.C.O. He replaces the night sights in the box and returns the box and torches to the limber, or in a place of safety, according to instructions given by the section corporal.

Section commander and section corporal take up their positions as for direct fire.

NOTE.—The aiming posts may be left out in position and the indirect fire equipment retained at the guns in readiness for smoke, etc. Any necessary instructions being given by the section commander before ordering "In Aiming Lamps."

Section commander.—

"In Aiming Lamps."

Nos. 1 remove the dial sights.

No. 3 of the odd-numbered sub-section moves out, replaces the lamp in the box and brings in box and aiming post. He collects the reel from the section commander and rewinds the line, replacing it in the box. He collects the torches from the section commander and section corporal and the dial sights from Nos. 1 and replaces them with the aiming lamp and aiming post, in a place of safety, until an opportunity occurs for them to be returned.

Section commander and section corporal take up their positions as for direct fire.

NOTE.—To change from night firing to indirect fire.

Nos. 1 check their aim on the aiming lamp.

No. 3 of the odd-numbered sub-section acts as for direct fire, except that the aiming post is left out in its position.

Nos. 1 realign collimator on the aiming post.

Light horse with pack equipment—see Note to Lesson 71.

SECTION 18.—PLATOON DRILL—INDIRECT.

Instructor's Notes

1. *Signals.* The required signals must be taught before proceeding with platoon drill—indirect. (See Sec. 13.)

2. As proficiency is attained, the drill will be practised, making use of cover as in section drill—direct fire.

3. *Stores required:*—Each section—as for section drill—direct fire, plus two clinometers, two bar foresights, two aiming and two zero posts, per section.

Two dial sights and aiming posts.

4. The object of platoon drill—indirect, is to teach and exercise the platoon personnel in their drill duties as a fire unit employing indirect fire.

5. *Beginning of drill.* Before the drill begins the instructor will fall the platoon in and detail off section N.C.O.'s and gun numbers. (Where the instructor himself is not acting as platoon sergeant—or commander—he will detail a fire controller in addition.) He will inform the senior section corporal where the vehicles are to be sent when the required stores have been removed and reported correct. (For drill purposes this need only be a short distance in rear.)

LESSON 73.—PREPARE FOR ACTION.

Infantry Limber.*Additional stores:*—

A complete limber for each section, with limber covers and rests for poles (if horses not present). Four gun chests. Stores packed in limber and covers secured. Where complete limbers are not available, one portion will be allotted to each section, the indirect fire equipment being placed on the ground a short distance in rear.

Fire controller (instructor).—

“Fall In.”—The platoon will assemble by sections as for section drill—direct fire. The junior section commander a few paces in front of the centre of the platoon. The senior section commander moving to the instructor and being sent by him to the flank of the gun position nearest the platoon O.P. The instructor orders the junior section commander to take charge, himself moving to the position where the platoon is to come into action.

Junior section commander.—

“Platoon, attention.”

“Tell Off By Sections”—section corporals report “No. 1 section,” “No. 2 section.”

“Tell Off By Sub-Sections”—Nos. 1 report “No. 1 sub-section,” “No. 2,” “No. 3,” “No. 4 sub-section.”

“By Sections, Number”—each section numbers as in squad drill.

“. . . Belts, for Indirect Fire, Prepare for Action.”

The action of each section will be as in section drill—direct fire. In addition, the section corporals and Nos. 5 unfasten the cover on the rear portion of the limbers. The corporals take out the clinometers and bars foresight and hand them to their Nos. 2. Nos. 2 place them over their left shoulders. Nos. 5 take out the aiming and zero posts and hand them to their Nos. 3. The corporals and Nos. 5 refasten the limber cover. The junior section commander will indicate suitable positions to the Nos. 1 as they move forward. Section corporals will supervise the actions of their sections and finally take up their positions a few paces in front and lie down, collecting reports from their Nos. 1 and reporting “No. . . . section, Correct” (or otherwise) to the junior section commander.

The junior section commander takes up his position a few paces in front of the centre of the platoon. On receipt of the above reports from the section corporals, the junior section commander will instruct the senior section corporal to move the limbers. The senior section corporal will go to the nearest limber driver and give him the order to move, showing route and position to which to return to, then order the remaining driver to conform.

He will also detail a No. 5 to accompany each limber as brakesman.

If a “long carry” is necessary, the same procedure as in section drill—direct fire, will be adopted, except that the junior section commander will detail loads.

The action of each section will be as in section drill—direct fire. In addition to their previous duties, Nos. 1 will first remove dial sights, placing the strap over their right shoulders.

Nos. 3 of the odd-numbered sub-sections, remove the aiming post.

LESSON 74.—TO COME INTO ACTION.

Senior section commander orders forward the junior section commander and gives the following information:—

Method of paralleling (position of director, if necessary).

Pivot gun (if any).

Gun position.

Frontage.

Direction.

Senior section commander.—**“Junior section commander.”**

Junior section commander doubles forward and receives the above information from the senior section commander. He then doubles away to the opposite flank of the gun position, kneels down and faces inwards.

Senior section commander.—**“For Indirect Fire—Mount Gun.”**

Both section commanders will supervise the arrival of Nos. 1

of the nearest section, ensuring that the inner gun is the correct distance from him and "staggered."

Nos. 1—double forward, mount their tripods on the positions as directed by the section commander. They stamp in the shoes of their tripods before sitting down, having ensured that the socket is upright.

Nos. 2—having mounted the gun, kneel on their left knees on the right side of the gun and affix the bar foresight.

Nos. 3—carry out their duties as in section drill—direct fire, finally taking up their positions as indicated by the senior section corporal. They retain the aiming and zero posts.

Nos. 4 and 5—act as directed by the junior section corporal.

Nos. 1.—Double forward, mount their tripods on the positions as directed by the section commander. They stamp in the shoes of their tripods before sitting down, having ensured that the socket is upright and affix the dial sight.

Nos. 2.—Having mounted their guns, will take post as for direct fire.

Nos. 3.—Carry out their duties as in section drill—direct fire, finally taking up their positions as indicated by the senior section corporal. Nos. 3 of the odd-numbered sub-sections put out the aiming posts centrally between the two guns of the section.

NOTES.—The senior section corporal will position Nos. 3 and will then remain in the forward area of the chain of supply.

The junior section corporal will position Nos. 4 and 5 and will remain in the rear area of the chain of supply.

Section commanders will acknowledge all verbal orders by raising the right hand fully above the head, lowering it to the side on completion of the order. They will keep their hand raised if a repetition of the order is required. They repeat orders when necessary.

At the first opportunity, the senior section commander will calculate the Minimum Q.A. to clear the crest (see Lesson 115) and will report it to the fire controller.

To parallel the guns.

The guns are paralleled by one of the methods described in Part III, Sec. 25.

LESSON 75.—DIRECTOR METHOD.

Instructor's Notes

Additional stores:—

Two directors and stands (fire controller and senior section commander). This method should be practised, using the director in different positions in relation to the guns.

Senior section commander.—

"All—on Director."

Nos. 1 raise their tangent sights, lay on the socket of the director with their gun foresights and when laid, Nos. 2 set the direction dial to zero.

Junior section commander.—On designation of first gun to receive its zero line, will take up a position behind that gun. He will repeat back the angle to the fire controller. He will repeat the above procedure for each gun in turn, finally moving along and in rear of the guns, checking each gun in turn for parallelism. To do this he will stand behind the guns and glance along each barrel casing in turn. If there is a distant crest in the front of the guns, the lines of fire of the four guns should be on approximately the same point. If no distant crest is available he will see where the line of fire of one gun crosses the crest in front and make his own approximation from this as to where the others should cross right or left of it. He will report immediately to the senior section commander should any gun not appear to be parallel.

Fire controller.—

“Zero Lines.”

"No. 1.—Right (or Left) . . . Degrees . . . Minutes."

"No. 2.— " "

"No. 3.— " " "

"No. 4.— ,, ,, ,,

Nos. 2 swing their guns through the angles ordered and reset their direction dials to zero. The setting of the dial will not be altered unless a "new zero line" is ordered.

Nos. 1 will place the angle ordered on the dial and deflection drums and lay on the director. They will then re-zero the dial and deflection drums.

Nos. 2 will set the tripod dial at zero.

LESSON 76.—POST METHOD.

Instructor's Note

Additional stores:—

Two zero posts.

The senior section commander marks the position (with reference to the posts) over which the pivot gun will be mounted.

On the order **"For Indirect Fire—Mount Gun,"** the Nos. 1 and 2 of the pivot gun, align the gun on the posts, moving the tripod right or left until the line of sight over the gun sight is in exact alignment of the posts. When this has been checked by the senior section commander, Nos. 1 and 2 stamp in the tripod, the senior section commander re-checks the line of sight and ensures that the direction dial is set at 180 degrees.

Senior section commander.—

"All on No. . . ."

Nos. 1 of the remaining guns lay on the socket of the pivot gun, using their gun foresights. When laid, Nos. 2 set the direction dials to zero. No. 1 of the pivot gun lays on the socket of each gun in turn as directed by the senior section commander.

Junior section commander takes up his position behind the gun farthest from the pivot gun, repeats the angle to the senior section commander. He repeats the procedure with the remaining guns, then checks for parallelism as before described.

Senior section commander.—

"Zero Lines."

"No. . . . Right (or Left) . . . Degrees . . . Minutes."

"No. . . . " " "

"No. . . . " " "

Nos. 2 swing their guns through the angle ordered and reset the direction dials to zero.

No. 1 of the pivot gun will be ordered to relay on to the posts. The senior section commander checks the dial; if found to be correct he orders the No. 2 to set the direction dial to zero.

Senior section commander.—Reports to fire controller—"Guns on zero lines," and orders the No. 3 of the pivot gun to bring in the posts, distributing them as necessary.

On the order **"For Indirect Fire—Mount Gun,"** the Nos. 1 and 2 of the pivot gun align the gun on the posts, moving the tripod right or left until the line of sight through the collimator is in exact alignment of the posts. When this has been done and checked by the senior section commander, Nos. 1 and 2 stamp in the tripod. The senior section commander rechecks the line of sight and ensures that the dial and deflection drums are set at zero.

Senior section commander lays the dial sight at the collimator of each gun in turn, reading the angle from the front pointer of the dial and deflection drum.

Junior section commander takes up his position behind the gun farthest from the pivot gun, repeats the angle to the senior section commander and checks for parallelism as in the director method.

Senior section commander.—

"Zero Lines."

"No. . . . Right (or Left) . . . Degrees . . . Minutes."

"No. . . . " " "

"No. . . . " " "

Nos. 1 on receipt of the angle, set that angle on the dial sight and lay on the collimator of the pivot gun. When laid they will re-set the dial sight at ZERO. No. 1 of the pivot gun will be ordered to re-zero his dial sight.

Senior section commander checks the aim and dial (closing the angle).

Nos. 2 set the tripod dial at zero.

Senior section commander reports to fire controller—"Guns on zero lines," and orders No. 3 of the pivot gun to bring in the fire controller's posts.

LESSON 77.—COMBINATION OF DISTANT AIMING POINT AND POSTS (OR TARGET).

Instructor's Note

Additional stores:—

Two zero posts.

Senior section commander.—Selects the D.A.P. and with a director measures the angle D.A.P.—Posts (or Target). The junior section commander doubles forward when ordered and receives information including D.A.P. which the senior section commander will indicate by director. The junior section commander then takes up his position as in director method.

Senior section commander.—

"For Indirect Fire—Mount Gun."

Guns are mounted as for director method, the pivot gun being mounted over the spot from which the senior section commander measured the angle D.A.P.—Posts (or Target).

Both section commanders then lay the two guns nearest their own flank on the D.A.P., ordering the Nos. 2 to zero the direction dial when guns are so laid.

Senior section commander.—

"Zero Lines."

"All—Right (or Left) . . . Degrees . . . Minutes."

Junior section commander repeats the angle back and checks the line of all guns for parallelism.

Nos. 2 swing their guns through the angle ordered and re-set the direction dial to zero.

Senior section commander.—Reports to fire controller—"Guns on zero lines," and orders the No. 3 of the pivot gun to bring in the posts (if planted), distributing them as necessary.

Senior section commander.—

"For Indirect Fire—Mount Gun."

Guns are mounted as for director method. The pivot gun being mounted over the spot from which the senior section commander measured the angle D.A.P.—Posts (or Target).

Senior section commander.—

"Zero Lines."

"All—Right (or Left) . . . Degrees . . . Minutes."

Nos. 1 will set their dial sights at the angle ordered.

Both section commanders will lay the collimator of each gun of their section on the D.A.P.

Nos. 1 will zero the dial sight.

Nos. 2 set the tripod dial at zero.

Junior section commander repeats the angle and checks the line of all guns for parallelism.

Senior section commander.—Reports to fire controller—"Guns on zero lines," and orders No. 3 of the pivot gun to bring in the fire controller's posts, if put out.

LESSON 78.—T.O.G. METHOD.

Instructor's Notes

Additional stores:—

Four zero posts.

Pivot gun as for Post method except that the gun is laid on the director. The guns are then paralleled as in D.A.P. or Post methods.

Senior section commander.—

"Out Zero Posts."

Nos. 3 put out zero posts as directed by Nos. 1.

Senior section commander.—Reports to fire controller—"Guns on zero lines."

LESSON 79.—TO PLACE THE NECESSARY ELEVATION ON THE GUNS.

Fire controller.—

"Elevation (or Depression)."

"No. . . (or All) . . . Degrees . . . Minutes."

Nos. 1 lower the tangent sight, open the rear cover and retain their holding.

Nos. 2 set their clinometers at the angle ordered, place the clinometer on the gun and bring the bubble central by means of the elevating handwheel. The clinometer is then removed and replaced in its case without re-setting it to zero.

Nos. 1 lower the rear cover and proceed to check crest clearance.

To check crest clearance.—

i. *Near crest.*—

When the gun has been laid for elevation (or depression) Nos. 1 set their tangent sights at 400 yards and see that the line of sight over the gun foresight clears the crest. If it does not, they report to their section commander, "No. . . . Gun Does Not Clear Crest."

ii. *Distant crest.*—

Senior section commander.—

"Check for Crest Clearance With Sights at . . ."

(For method of obtaining this range see Sec. 25, Lesson 115.)

Nos. 1 set the tangent sight at the graduation ordered and proceed as in (i).

To plant aiming posts.

Fire controller.—

"Out Aiming Posts."

Nos. 3 plant aiming posts under the signalled directions of their Nos. 1. After aiming posts have been planted, Nos. 1

test the adjustment of their clamps, finally relaying on to their aiming posts.

Senior section commander.—Reports to fire controller as soon as all Nos. 3 have returned to the gun position—"Guns ready to load"—he also reports any gun which will not clear crest.

Fire controller.—

"Load."

Nos. 1 load in the normal way.

Fire controller.—

"No. . . . (or All) . . . Hundred (or Fifty) . . . Plus (or Minus) . . . Degrees . . . Minutes"

or

"Elevation (or Depression)—No. . . . (or All) . . . Degrees . . . Minutes."

Nos. 1 act as taught in use of instruments.

To check crest clearance.

i. *Near crest.*—

When the gun has been laid for elevation (or depression) Nos. 1 set their tangent sights at 400 yards and see that the line of sight over the gun foresight clears the crest. If it does not, they report to their section commander, "No. . . . Gun Does Not Clear Crest."

ii. *Distant crest.*—

Senior section commander.—

"Check for Crest Clearance With Sights at . . ."

(For method of obtaining this range see Sec. 25, Lesson 115.)

Nos. 1 set the tangent sight at the graduation ordered and proceed as in (i).

Nos. 1 test their clamps and finally relay on the aiming posts.

Senior section commander.—Reports to fire controller—"Guns ready to load," also reporting any gun which will not clear crest.

Fire controller.—

"Load."

LESSON 80.—DISTRIBUTION AND CORRECTIONS.

Fire controller.—

"Distribution."

"No. . . . Nil."

"No. . . . Right (or Left) . . . Degrees . . . Minutes."

"No. . . .

"

"

"

"No. . . .

"

"

"

Nos. 2 set the bar foresights at the angle ordered.

Nos. 1 tap the gun across until the line of sight is again on the aiming post.

NOTE.—Whenever No. 2 is making an adjustment to the bar foresight, No. 1 will automatically assume the “rest” position, i.e., hands off the traversing handles.

Nos. 1 set the deflection drum to the angle ordered, tap the gun across until the collimator is on the aiming post. (He ensures that the bubble is central, using the handwheel. If not, he will centralise it and realign the collimator on to the aiming post.)

To tap right and left.

Fire controller.—

“Right and left . . . taps.”

After this order has been received, Nos. 2 indicate their guns ready to fire. When all guns are ready the junior section commander will indicate to the senior section commander who will indicate to the fire controller.

The right section will tap first to the left, and the left section will tap first to the right, by the amount ordered.

To make allowance for side wind.

Fire controller.—

“Wind—Right (or Left) . . . Degrees . . . Minutes.”

Nos. 2 set the bar foresights at the amount ordered. (If the bar foresight is not at zero they add or subtract the amount to or from the angle on the bar foresight.)

Nos. 1 tap the gun over until the line of sight is again on the aiming post.

Nos. 1 make the necessary adjustment on the deflection drum and tap their guns over until the line of sight is on the aiming post.

Nos. 2 act as in section drill—direct fire.

NOTES.—On the order “Wind,” both section commanders fully extend their right hand above the head, lowering it on receipt of the allowance. Nos. 2 lower their hand.

As soon as the guns are relaid on the aiming posts, Nos. 2 and section commanders indicate that the guns are ready to open fire.

Fire controller—signals or orders.—

“Fire.”

Section commanders and Nos. 2 lower their hands.

Nos. 2 ordering fire, if necessary.

Nos. 1 fire.

Fire controller signals.—

“Stop.”

Section commanders repeat.—

Nos. 2 repeat “Stop.”

Nos. 1 stop firing, relay on the aiming post and order Nos. 2 to indicate the gun ready to re-open fire.

Corrections during firing.

NOTE.—Any corrections during firing, signalled by the fire controller, must first be repeated back by the senior section commander, before being given verbally by him to the guns.

i. Direction.—

Fire controller.—

“Stop—All Right (or Left) . . . Degrees . . . Minutes, go on.”

Nos. 2 make the necessary adjustment to the bar foresight.

Nos. 1 relay on the aiming post and resume firing.

Nos. 1 act as taught in Controlled Corrections, Indirect, Emergency Gun Drill.

ii. Elevation.—

Fire controller.—

“Stop—All Up (or Down) . . . Degrees . . . Minutes—go on.”

Nos. 1 act as taught in Controlled Corrections, Indirect, Emergency Gun Drill. (If the correction is “Down,” they will re-check crest clearance before re-aligning line of sight on the aiming post.) When re-aligned, they will resume firing.

Nos. 2 make the necessary adjustment to the clinometer.

Fire controller.—

“Stop—All Up (or Down) . . . Hundred (or Fifty)—go on”

or

“Stop—All Up (or Down) . . . Degrees . . . Minutes—go on.”

Nos. 1 act as taught in Controlled Corrections, Indirect. (If the correction is “Down,” they will re-check for crest clearance before resuming fire.)

NOTE.—Should the correction not include the order to “Go On,” Nos. 2 will indicate the gun ready to re-open fire as soon as the alteration is completed and Nos. 1 relaid.

LESSON 81.—TO ENGAGE A NEW TARGET.

Fire controller.—

“Stop—All on Zero Lines.”

Nos. 2 set the bar foresight at zero.

Nos. 1 relay on the aiming post.

Nos. 2 see that the direction dial is at zero.

i. Where the total switch does not exceed 7 degrees.

Fire controller.—

“All—Right (or Left) . . . Degrees . . . Minutes.”

Nos. 2 adjust the bar foresight.

Nos. 1 relay on the aiming post.

Fire controller.—

“Elevation (or Depression). No. . . . (or All) . . . Degrees . . . Minutes.”

Nos. 1 and 2 perform the duties as in Lesson 80.
Fire controller continues with the remainder of the fire order.

ii. Where the total switch exceeds 7 degrees.

Fire controller.—

"Stop—All on Zero Lines."

Nos. 1 and 2 act as in (i).

Fire controller.—

"All—Right (or Left) . . . Degrees . . . Minutes."

Nos. 2 swing their guns through the angle ordered, on the direction dial.

Fire controller.—

"Elevation (or Depression), No. . . (or All) . . . Degrees . . . Minutes."

Nos. 1 and 2 act as in Lesson 80.

Fire controller.—

"Unload—Clear Guns—Out Aiming Posts."

Guns are unloaded and cleared, Nos. 2 reporting to section commanders, the senior section commander reporting to fire controller. Nos. 3 move out and re-plant the aiming posts under directions from No. 1

or

the fire controller orders **"Pick up Gun Aiming Marks"** and then continues with the remainder of the fire order.

Fire controller.—

"Stop—All on Zero Lines."

Nos. 1 set their dials and deflection drums at zero and relay on the aiming posts.

Nos. 2 check the tripod dial to see that it is at zero.

Fire controller.—

"All Right (or Left) . . . Degrees . . . Minutes."

Nos. 1 set their dial sights to the angle ordered and relay on the aiming posts.

Fire controller.—Orders elevation as in Lesson 80.

Nos. 1 perform their duties as in Lesson 80.

Fire controller.—Continues with the remainder of the fire order.

LESSON 82.—FIRE CONTROL CHARTS.

Instructor's Note

Additional stores:—

Four fire control charts. Four watches.

This drill is based on the assumption that all N.C.O.'s have been informed that the fire will be controlled by fire control chart.

The guns are placed on zero lines by any method previously taught.

When guns are paralleled the fire controller calls for section commanders and section corporals and issues the fire control charts.

Section commanders and section corporals take post at their respective guns (corporals at Nos. 2 and 4 guns).

Fire controller.—

"Load."

"Prepare for Task 1."

The N.C.O. at each gun will issue orders to the No. 1 in accordance with the detail on his chart. When their guns are ready to fire, they report to the senior section commander, who in turn reports to the fire controller—"Guns ready to fire."

Fire controller.—

"Fire."

The N.C.O. in charge of each gun will control the rate of fire and lifts, etc., as shown on his chart. He will also order **"Stop"** at the end of each task.

Where time is allotted for **"Points during firing"** on the fire control charts, the N.C.O. must see that this time is not exceeded.

NOTE.—The above procedure will apply to cavalry personnel whenever arrangements allow of the necessary equipment being carried. For **"limber"** read **"led horses"**; for **"platoon"** read **"troop,"** etc.

LESSON 83.—CEASE FIRING AND ON LIMBER.

Fire controller signals.—

"Cease Firing."

Senior section commander acknowledges the signal. He then signals for the limbers. When they are in position and the Nos. 4 are forward, he will order—"Unload, Clear Guns." When all guns are reported **"clear"** he will order **"Cease Firing."**

The movement will be carried as in section drill—direct fire, with the addition that Nos. 2 will remove the bar foresight before dismounting the gun.

Nos. 3 bringing in the aiming post before removing their stores from the gun.

Senior section commander.—

"On Limber."

Each section will act as in section drill—direct fire. Section corporals supervising the return of stores to their respective section limbers.

"Cease Firing."

The movement will be carried out as in section drill—direct fire, with the addition that Nos. 1 will remove their dial sights before the guns are dismounted.

SECTION 19—SECTION DRILL, NIGHT FIRING.

*Instructor's Notes**Stores:—*

As for section drill—direct fire, plus two clinometers, two bar foresights, two aiming posts, two sets of pegs, line, one aiming lamp box with two sets of night sights. Limber (with support for pole, if horses not present). Two gun chests. Limber cover. Stores packed in limber and cover secured. Where a complete limber is not available, a fore portion will be used, the night firing stores being placed on the ground a short distance in rear.

As for section drill—direct fire, plus two dial sights, one aiming lamp, one aiming post at least, two sets of pegs, line, two zero posts.

Stores packed in limber as above.

Should pegs, line, not be available, two short pegs (for gun positions) and two long pegs (for direction) will be used in lieu.

Both section commander and section corporal will be in possession of a torch.

The object of section drill—night firing is to teach and exercise the section personnel in their drill duties as a fire unit by night. The following drill presupposes that guns are being brought up after dark.

LESSON 84.—PREPARE FOR ACTION AND COME INTO ACTION.

Instructor's Notes

Gun and direction pegs will be in position before the lesson commences.

Section corporal.—

“... Belts, for Night Firing, Prepare for Action.”

All duties are the same as for indirect fire—prepare for action except that the gun numbers remain with their equipment in file in a central position, close to and in front of the limber, as directed by the section corporal.

No. 4 of the odd-numbered sub-section removes the night aiming box.

No. 5 of the odd-numbered sub-section, in addition to his other duties, carries out the ammunition duties of his No. 4.

The section corporal is responsible that all necessary stores have been removed from the limber. He will then detail loads and move the section to a position in rear of the gun pegs, the limber moving to a suitable position, as directed by the section corporal.

Gun and direction pegs and zero posts will be in position before the lesson commences.

Section corporal.—

“... Belts, for Night Firing, Prepare for Action.”

All duties are the same as for indirect fire—prepare for action, except that the gun numbers remain with their equipment in file in a central position, close to and in front of the limber, as directed by the section corporal.

No. 4 of the odd-numbered sub-section removes the aiming lamp and aiming post. (Nos. 3 will not remove aiming posts.)

No. 5 of the odd-numbered sub-section, in addition to his other duties, carries out the ammunition duties of his No. 4.

The section corporal is responsible that all necessary stores have been removed from the limber. He will detail loads and move the section to a position in rear of the gun pegs, the limber moving to a suitable position, as directed by the section corporal.

TO COME INTO ACTION.

The section corporal reports to the section commander and is shown the gun peg of No. 2 gun, the direction of the rear leg and the direction of his direction peg, and zero post.

Section commander and section corporal.—

“No. . . . For Night Firing, Mount Gun.”

No. 1 moves forward with his tripod to a position indicated to him by the section commander or corporal a few feet in rear of the gun peg. He mounts the tripod, removes the crosshead and with assistance of the N.C.O. places the tripod so that the cross wires in the bottom of the socket are directly over the collar of the gun peg and with the centre of the socket over the peg. He stamps in the tripod and after the N.C.O. has satisfied himself that the mounting is upright and is directly over the gun peg, No. 1 replaces the crosshead, takes up his position and removes the joint pins.

The N.C.O. calls up No. 2. No. 2 mounts the gun on the tripod, fixes the bar foresight and kneels at the right side of the gun. He fixes the night sights when they are handed to him by No. 4.

No. 4 of the odd-numbered sub-section brings forward the night firing box, places it between the two guns, hands the night sights to each No. 2 and lies down in rear of the box. He accompanies the section commander to the direction pegs when ordered to do so, taking with him the night firing box.

Section commander and section corporal.—

“No. . . . For Night Firing, Mount Gun.”

Nos. 1 and 2 mount their guns as in platoon drill—indirect, approximately over the gun peg.

Nos. 3, when called for by the N.C.O. at the gun, will carry out their duties as in “Mount Gun, Emergency Gun Drill,” with

the exception that No. 3 of the odd-numbered sub-section remains on the gun position and receives the aiming lamp and aiming post from No. 4.

No. 4 of the odd-numbered sub-section brings forward the aiming lamp and aiming post and hands them to the No. 3 of the odd-numbered sub-section after the No. 3 has placed the two belt boxes and the condenser can at the gun position.

LESSON 85.—TO OBTAIN DIRECTION AND ELEVATION.

DIRECTION.

Section commander informs the section corporal which direction peg he is going to first and, accompanied by No. 4 with the night firing box, proceeds to each direction peg in turn. He orders No. 4 to remove a lamp and place it as low down as possible behind the direction peg so that the peg is outlined down the centre of the lamp.

Section commander.—

“No. . . . Direction.”

No. 1 of the gun named aligns the gun on the direction peg. No. 2 sets the direction dial at zero.

Section corporal checks the line and setting of the dial, reporting “No. . . . Correct,” as soon as he has finished. He then moves to the other gun where the above procedure is repeated. The section commander returns to his gun, the No. 4 to the centre of the gun position. Both N.C.O.’s call for their Nos. 3.

Nos. 3 bring forward the aiming posts, condenser cans and two belt boxes. They place the condenser cans and belt boxes at the guns in the normal way and proceed to No. 4’s position with their aiming post.

Practice will be given with direction pegs in rear. In this case, after direction has been given and the aim has been laid and checked, the direction dial will be set to 180 degrees. The gun will then be swung round until the pointer is at zero. The section corporal will report “No. . . . Correct.”

Section commander informs the section corporal which direction peg he is going to first. Accompanied by the No. 3 of the odd-numbered sub-section with aiming lamp and aiming post, he will order No. 3 to place the lamp as low down as possible behind the direction peg with the peg outlined down the centre of the lamp.

Section commander.—

“No. . . . Direction.”

No. 1, assisted by the No. 2, moves the gun until the line of sight through the collimator is aligned through the zero post on to the lamp. If the lamp is some considerable distance from the gun, the section corporal should shine the torch into the front of the collimator.

Section corporal checks the aim, sees that the dial and deflection drums are at zero, orders the legs to be stamped in, re-checks and orders Nos. 2 to set the direction dial on the tripod at ZERO. Reports to section commander, “No. . . . Correct.”

Section commander, having given direction to both guns, will direct the No. 3 to put in the aiming lamp. He will then collect the zero posts, and return to his gun.

No. 3 will put in the aiming post, open the box, place on the aiming lamp, secure the box, attach the line and bring the reel back to the section commander. He will then complete his ammunition duties.

When the direction pegs are in rear the procedure will be as above, with the exception that when “Direction” is ordered the dial sight will be set at zero on the front pointer. When the aim and dials have been checked by the section corporal, the dial sight will be set at zero on the rear pointer, and checked before the section corporal reports, “No. . . . Correct.”

ELEVATION.

Section commander.—

“Elevation (or Depression) . . . Degrees . . . Minutes.”

Nos. 1 and 2 place elevation on the gun (as in Lesson 80), assisted by the supervising N.C.O.

No. 1 then set their tangent sight at 2,500.

Section commander—as for Lesson 80, Platoon Drill—Indirect.

Nos. 1 act as in Lesson 80, Platoon Drill—Indirect, with the assistance of the N.C.O. at the gun. They will then align their collimators on the lamp.

To Plant Aiming Posts.

Section commander.—

“Out Aiming Lamps.”

No. 4 unfolds the handle, opens the box and hands a lamp to each No. 3, who place it on their aiming post. Nos. 3 hold the aiming post in one hand and the cable in the other so as to avoid strain on the terminals. No. 4 unwinds the cable and Nos. 3 move on to the line of direction of their respective guns. No. 4 switches on the light and No. 1 directs No. 3 verbally as to the planting of the aiming lamp, as when planting the aiming post. When correctly planted, Nos. 1 will call “CORRECT,” and the N.C.O. at each gun will check the aim on the lamp and the setting of the direction dial before ordering the No. 3 to come in.

Nos. 3 come in around the flanks and report to the section commander—“No. 3 of No. . . . In.” The section commander, as they report, ordering them to complete their ammunition duties. When this duty is completed each N.C.O. will indicate a position for the No. 3 to adopt, other spare numbers moving as directed by the section commander.

NOTE.—The remainder of the drill in action is as for indirect fire.

LESSON 86.—FIRE CONTROL CHARTS.

Instructor's Notes

Additional stores:—

Two fire control charts, two watches.

The section commander and section corporal will each have a fire control chart.

The drill will be as taught already, up to the stage of the aiming lamp being put out.

Section commander.—

"Prepare for Task 1."

Section corporal.—Reports when his gun is ready.

Section commander.—

"Load."

"Fire."

Each N.C.O. controls the fire of their guns as in platoon drill—indirect (charts). When not actually firing on a task, guns will always be laid on the fixed line (should a fixed line not be ordered, they will be prepared for their next task in the night programme). Guns will be half loaded, thumbpiece pressed and sentries posted.

LESSON 87.—TO CEASE FIRING AND ON LIMBER.

Section commander.—

"Unload—Clear Guns."

Guns will be unloaded and cleared, the section corporal reporting to the section commander when No. 2 gun is cleared.

Section commander.—

"In Aiming Lamps."

Nos. 1, 2, 3 and No. 4 carry out their duties as in Lesson 72—section drill—direct fire.

Section commander.—

"Cease Firing."

Gun numbers will act as in Lesson 66, section drill—direct fire.

After the guns have been dismounted, the section commander will "fall in" the section and check stores. He is himself responsible for the pegs, line, and zero posts.

The section will move back to the limber led by the section corporal, the section commander moving in rear. On arrival at the position of the limber, the section commander orders—

"On Limber."

The drill will be carried out as in section drill—direct fire except that the No. 4 of the odd-numbered sub-section will replace the aiming lamp, box.

The drill will be carried out as in section drill—direct fire, except that No. 4 of the odd-numbered sub-section will replace the aiming post and aiming lamp.

NOTE.—The above procedure will apply to Cavalry whenever arrangements allow of night firing equipment being carried. For "limber" read "led horse," etc.

SECTION 20.—OBSERVATION OF FIRE AND RANGING.

GENERAL.

1. **Observation of fire** deals with deducing from the strike of the bullets the position of the beaten zone with reference to the target, and is a necessary preliminary to ranging.

Ranging is the process of determining by observation of fire the direction and elevation necessary to hit a given target.

2. Observation of fire and ranging are normally carried out by the fire controller. In heavy fighting, where unit control may break down, control by the firer will become necessary. Except in very favourable circumstances, little reliance can be placed on observation by the firer at ranges over 800 yards. The training in ranging therefore is confined to ranges of 1000 yards and under, using the naked eye.

3. Personnel will require training as follows:—

Officers and N.C.O.'s.—To observe and correct the fire at all machine-gun ranges, using field glasses when necessary.

All ranks.—To observe and correct fire, using the naked eye up to ranges of 1000 yards.

Rangetaker.—To observe fire, using the rangefinder, and to report the position of the strike.

4. **Observation of fire.**—

i. The possibility of observation of strike will depend on a variety of factors in addition to the distance of the observer from the target, of which the following are the most important:—

(a) The nature of the soil round the target. Sand, plough and water generally give good results, but damp ground, long grass and undergrowth are bad.

(b) Visibility as affected by light, mist or mirage.

(c) The position of the sun. When low in the horizon strike is easier to pick up than when it is high.

(d) Wind. A high wind tends to blow away the dust caused by the strike before it can be observed.

The action of the enemy will often be a clue as to whether fire effect is being obtained, e.g., cessation of hostile fire, etc.

In war, the fall of shell and the strike of bullets from other small arms near the target will interfere with accurate observation.

ii. It is a fundamental principle in observation of fire only to accept information which is definite or certain, and not to act on what is uncertain or no more than probable. Thus, before any deduction can be made as to the exact position of a beaten zone with reference to the target, it is necessary to decide whether the whole beaten zone is being observed or whether only a portion of it is falling on ground which gives observation of strike, and if so, what portion of it.

Again, when a foreshortened view of the ground is obtained, it is possible to make errors of great magnitude if guesswork only is relied upon.

- iii. In the engagement of targets with width or depth the beaten zones of the guns of the fire unit are distributed over the target according to the method of fire employed. Under these circumstances it is not always possible to determine that full fire effect has been obtained owing to the difficulty of checking each individual beaten zone.
- iv. Tracer ammunition is only of value for determining correctness of line.
- v. It must be remembered that it is necessary to observe the area in which the beaten zone is to fall, rather than the ground in the immediate vicinity of the definite aiming mark.
- vi. It may occur that an area of ground adjacent to the target is specially suitable for observation. Under these circumstances it may be profitable to direct the fire on to this area in the first instance, correcting it on to the target as soon as observation has been obtained.
- vii. Bursts of fire must be long enough to enable the beaten zone to be "found," as well as to produce the required fire effect on the target.

5. Ranging.—

- i. Ranging may be carried out:—
 - (a) To correct fire on to a target as soon as the data obtained by observation warrants it.
 - (b) To register the direction and elevation required to hit a target after fire effect has been obtained.
- ii. It is required to bring the centres of the beaten zones on to their correct positions on the target as soon as possible after the first burst. This may entail corrections for elevation or direction or for both.

LESSON 88.—OBSERVATION OF FIRE.

Instructor's Notes

Stores:—

Sand model (or miniature range).

Strips cut to scale to represent beaten zones.

The instruction will take the form of a lecture on the subject matter of Sec. 20, illustrated on the sand model with the aid of models of beaten zones.

The instruction should be completed in the open country, indicating types of ground and their effect on the beaten zones, showing approximate dimensions and giving practice to officers and N.C.O.'s in use of graticules and field glasses.

The instruction to gun numbers will be confined to ranges up to 1000 yards.

Opportunity should be taken on all occasions when ball ammunition is used to practise officers, N.C.O.'s, rangetakers and gun numbers in observing the strike of bullets.

LESSON 89.—OBSERVATION OF FIRE AND RANGING.

Instructor's Note

Stores:—

Gun, tripod, slide rule or field glasses and prepared range card.

1. Explain.—

- i. The general principles to be followed are:—

- (a) Only correct when it is certain that full fire effect is not being obtained.
- (b) When making corrections, unless the correction required can be determined accurately, over-estimate it rather than under-estimate it, always provided the safety of our own troops is not involved.

ii. Correction for line.

Observation of machine-gun fire is normally carried out from a position near the gun. In this case it is possible to measure the exact correction required, either with graticuled glasses, slide rule or hand angles.

iii. Corrections for elevation.

- (a) It is not possible to determine the exact amount by which the beaten zone is falling over or short of the target.

The length of the beaten zone being known, if the whole of it is seen it will give a useful guide as to the amount of correction to give, e.g., it might be estimated that the distance between the beaten zone and the target is either once or twice the beaten zone as seen on the ground.

- (b) It should be remembered that where a foreshortened view of the ground is obtained, the tendency will be to under-estimate the correction required. As a rule, therefore, bold corrections should be given, particularly where there is no guide to the amount required.

The object is to include the target in a bracket rather than to "creep" towards it by inadequate corrections.

The actual manner in which corrections are given and acted upon will be found in Section 11, Lesson 55.

- iv. When fire is being observed from a flank, the fact that the bullets appear to be falling behind or in front of the target as viewed from the observation post will give definite indications as to whether a right or left correction is required.

Again, bullets which are falling on the correct line gun-target will appear from the observation post to be right or left of it.

In these circumstances, to ascertain the actual position of the bullets with reference to the target, it is necessary to visualise the line gun-target on the ground and judge accordingly.

NOTE.—Gun numbers will be required to judge the range to targets up to 1000 yards, officers and N.C.O.'s up to 2000 yards.

2. Method of instruction.

i. Elevation.

- (a) Indicate a target to the firer and tell him to estimate the range.
- (b) Using his estimated range, give a fire order to bring fire to bear on this target.
- (c) Indicate the position on the ground where his bullets would fall, according to whether he has over or underestimated the range. If this position is very difficult to indicate, lay the gun on to it.
- (d) The firer now judges the correction required, adjusts his tangent sight accordingly, relays on the target and continues firing.
- (e) If he has not made a suitable correction, indicate where the bullets are now falling.
- (f) Continue as above until it is considered that he has brought fire to bear on the target.
- (g) The firer now reports the correct range to hit the target.

ii. Direction.

- (a) Give a fire order to engage any suitable target.
- (b) Indicate the supposed position of the shots right or left of the target.
- (c) The firer deflects his line of sight to the left or right of the target by the amount the shots fell right or left of it originally.
- (d) Check the line of sight. Inform the firer that the shots are hitting the target, or, if the firer is in error, indicate a fresh point of strike and continue as above until the suitable correction has been made.
- (e) The firer now notes his point of aim.

iii. Direction and Elevation Combined.

The firer will be required to obtain the correct elevation to hit the target, and to indicate an auxiliary aiming mark which will give the necessary deflection right or left of it.

NOTE.—This lesson will be carried a stage further with officers and N.C.O.'s; the instructor will indicate the supposed position of the shots from a section or platoon (troop) of guns, and the fire controller under instruction will give the necessary corrections to bring the fire on to the target.

SECTION 21.—HEADQUARTERS TRAINING.

Note for Horsed Cavalry.

For "platoon (commander)" read "troop (leader)" for "section commander" read "section leader," and for "limbers" read "led horses."

1. The object of headquarters training is to train the personnel of section and platoon headquarters in their duties in the field by day and night under varying conditions and on different types of ground.

2. The training will be carried out with such personnel as are necessary for any particular exercise selected from the following:—

Platoon headquarters.

- 1 Platoon commander.
- 1 Platoon sergeant (in horsed cavalry, 2 sergeants).
- 1 Orderly.
- 1 Observer (Infantry only).

Each section.

- 4 Scouts.
- 1 Section commander.
- 1 Section corporal.
- 1 Orderly.
- 1 Rangetaker.

3. The platoon commander can combine the command of his platoon with direction and exercise.

Gun numbers and machine-gun equipment are not required. The rangetaker will invariably take his instrument when exercises are carried out on the ground. Platoon and section personnel taking part will be required to function correctly and issue the necessary orders based on the tactical situations as pictured by the directing officer.

4. As a preliminary to headquarters training exercises, commanders will be practised in the following:—

- i. Reconnaissance of section areas.
- ii. Reconnaissance of indirect fire positions.
- iii. Procedure in occupation and evacuation of positions.
- iv. Issue of orders.

NOTE.—iii and iv can usefully be carried out in the form of tactical exercises without troops.

5. In the preparation of an exercise—

- i. Decide on main lessons to be taught.
- ii. Select suitable ground or prepare sand table.
- iii. Produce simple tactical situations which will bring out the lessons to be taught.
- iv. Make sure the orders issued are clear and in themselves a lesson in the issue of verbal orders.

6. In conducting the exercise—
 - i. Assemble personnel taking part where the exercise starts.
 - ii. Explain situations, issue any necessary orders. Personnel then act in accordance with the situation, and issue orders if necessary.
 - iii. Criticise action and orders.
 - iv. Issue subsequent situations, criticise action and orders at each stage.
 - v. When necessary the conducting officer will represent gun numbers for the purpose of receiving instructions.

SECTION 22.—FIELD DUTIES.

Notes for Horsed Cavalry.

1. The commanding officer of a light horse regiment will normally carry out the duties and issue the orders laid down in this section for the O.C. Support Company.
2. The following field duties are generally applicable to the equivalent sub-units and ranks in horsed cavalry, except where indicated in the text as inapplicable. Modifications for horsed cavalry are included where necessary.
3. For "limbers" read "led horses" throughout.

Introductory.

1. General.

i. The field duties of a platoon are dealt with in the lessons which follow. The details of procedure and occupation of positions will depend on the orders given by the support company commander, whose preliminary arrangements are given in paragraph 8 below.

ii. Platoon areas are generally selected by the company commander, who must satisfy himself that the task can be carried out from the area detailed. In order to reduce the time required for reconnaissance by the platoon commander, such areas should be as well defined as possible.

The number of platoons that can be accommodated, even in direct fire positions, on a particular piece of ground without loss of concealment and with reasonable safety from artillery fire is limited.

iii. Owing to the difficulty of locating targets exactly, a platoon commander may often receive a target in general terms, e.g., a patch of gorse or front edge of a wood. In this case he must, by every means in his power, attempt to locate the exact position of the enemy in the locality described, so that ammunition is not wasted by firing on unoccupied ground.

He must, however, be careful to avoid being misled by dummy positions; if there is the slightest doubt in his mind, he must engage the whole target area laid down by his superior.

iv. In the occupation of a position it will be the duty of the platoon commander to determine before the position is occupied that the first target can be engaged or task carried out with safety to our own troops. When he is not controlling, he will, in his orders for the occupation of the position, inform the fire controller or controllers concerned that it is safe to fire on the first target, and will point out the position of our own troops.

The responsibility for subsequent safety will be with the fire controller.

The platoon commander should assist by keeping him informed regarding the movements of our own troops.

v. When firing direct, the platoon commander directs the fire of his two sections, the fire being controlled by the section commander. The only means of communication at the disposal

of a platoon commander for directing the fire of his platoon is by orderly or signal. As a guide, therefore, it is considered that where a whole platoon is required to fire over one arc, the two sections should not be further apart than about 300 yards. To minimise the effect of shell fire and to assist concealment, they should not be closer than about 100 yards.

vi. The platoon commander, in deciding whether he will order one arc for both sections or an arc for each, should remember that for ranges over 1,500 yards the fire of four guns is advisable in order to get full fire effect. Therefore, when targets over that range have to be engaged, they must be included in the arc of each section.

2. Direct fire.

i. The platoon commander reconnoitres his platoon area with a view to selecting section areas, platoon headquarters and tactical O.P. and decides on the disposal of his limbers to positions under cover.

In deciding on section areas, the platoon commander will look for positions which offer the following advantages:—

Suitable for the task.

Covered approaches.

Concealment for guns.

Ease of control.

Covered positions for limbers.

ii. The section commander reconnoitres his area for position for each gun and a control post. In selecting these the section commander will consider the points detailed in the platoon commander's reconnaissance above. To prevent the occupation of unnecessarily exposed positions, he should be clear as to the exact nature of his task and possibly the near limit of arc.

There are three alternative methods of bringing the guns into action open to the section commander:—

- (a) To use the section orderly, when available, to mark one gun position while he himself marks the other one, the guns being ordered or signalled into action independently.
- (b) To signal the guns up in turn, pointing out to each No. 1 as he arrives the gun position, first target, arc of fire and reference points.
- (c) To go back and bring forward Nos. 1 with tripods as far as cover allows and point out gun positions, etc., as in sub-para. (b) above.

iii. When firing over an arc, section commanders must exercise great care in the selection of targets and the moment to open fire. Targets which will have the greatest effect on the operations must be engaged first, and fire unit commanders should not allow themselves to be led into firing on targets which may be more obvious but not so dangerous tactically.

Premature opening of fire against unimportant targets may

have the effect of disclosing the positions of the guns unnecessarily and drawing enemy fire.

iv. In deciding on the rate of fire to be used the following factors must be taken into consideration:—

The tactical situation, the target, the range, the state of the ammunition supply and the effect it is desired to produce in a given time.

3. Indirect fire.

i. The main occasions on which indirect fire is or might be employed may be summarised as under:—

- (a) When it is impossible, or inadvisable to occupy a direct fire position.
- (b) In darkness, mist or smoke.
- (c) When guns placed in depth, in direct fire positions to prevent penetration in defence, can only fire in front of the foremost troops by this means.
- (d) When it is desired to place some guns in positions from which they can be easily withdrawn and where direct positions would not give such facility.

ii. When firing indirect, the platoon commander controls the fire of the platoon, unless the tactical situation demands his whole attention or he is concerned with liaison duties. In these cases he will delegate the fire control to the platoon sergeant.

The platoon commander reconnoitres for:—

- (a) A position for the guns.
- (b) Fire control observation post.
- (c) Positions in readiness.
- (d) Covered positions for limbers.

iii. In selecting the gun position the commander is influenced by:—

- (a) Crest clearance.
- (b) Enemy observation. This may be from the flanks.

4. Concealment.

i. When immediate machine-gun support is required, gun positions will be selected that enable the task to be carried out with minimum delay.

On such occasions there may not be sufficient time to reconnoitre for the best positions. The object is to produce the required fire as soon as possible, if necessary at risk to the machine guns, although every effort must be made to obtain concealment, or to move from an exposed position at the first opportunity.

ii. When there is sufficient time to reconnoitre for the most suitable positions offering concealment, and thereby opportunity for surprise, full consideration must be given to the enemy's observation. Obvious landmarks, such as conspicuous small woods, hedges, etc., may give cover from view, but they and

their vicinity should be avoided if likely to attract enemy artillery fire. Positions in the open and clear of landmarks, provided their occupation is unobserved, are preferable to those under inadequate cover that will be likely to draw artillery fire.

iii. All ranks must realise that a well-concealed position is easily disclosed by the movement of individuals within or about the area. It is therefore essential that personnel, such as commanders, observers, rangefinders and orderlies, who in the course of their duties must either be in exposed parts of the area or move in its vicinity, are trained to take adequate precautions. Carelessness during preliminary reconnaissance may disclose the positions.

iv. Camouflage.

Gun positions and observation posts may be camouflaged at the earliest opportunity, so as to conceal them from both air and ground observation.

In considering camouflage from air observation it should be remembered that newly turned earth and blast marks require particular attention. If tracks to and from the guns cannot be avoided, they must be cut down to a minimum, and steps should be taken to continue them beyond the gun position.

5. Platoon headquarters.—The requirements are:—

- i. Ease of communication between sections, the O.P. and platoon headquarters, and between platoon headquarters and company headquarters.
- ii. Good covered approach.
- iii. Concealment.

6. Observation post (O.P.).—The requirements are:—

- i. View of enemy positions or lines of approach and ground over which our own troops may move.
- ii. Good covered approach.
- iii. Accommodation for the required number of men.
- iv. Concealment.

7. Control post (C.P.).

Technical considerations affect the selection of the control post. The following requirements, however, should receive attention:—

- i. Full view of the whole arc for which the section is responsible.
- ii. As inconspicuous as possible.
- iii. Good covered approach.
- iv. Accommodation for required number of men.
- v. Concealment for fire control signals to be made.
- vi. Within voice control of the guns.

8. Entrenching.

At the first opportunity arrangements will be made for the protection of machine guns and personnel from enemy fire. This can be done by use of existing cover and by entrenching.

Two picks and four shovels for each section are carried on the infantry M.G. limber G.S. (A M.G. section, horsed cavalry, carries one pick and two shovels.) These tools enable the guns and a proportion of the personnel to be dug in immediately without outside assistance.

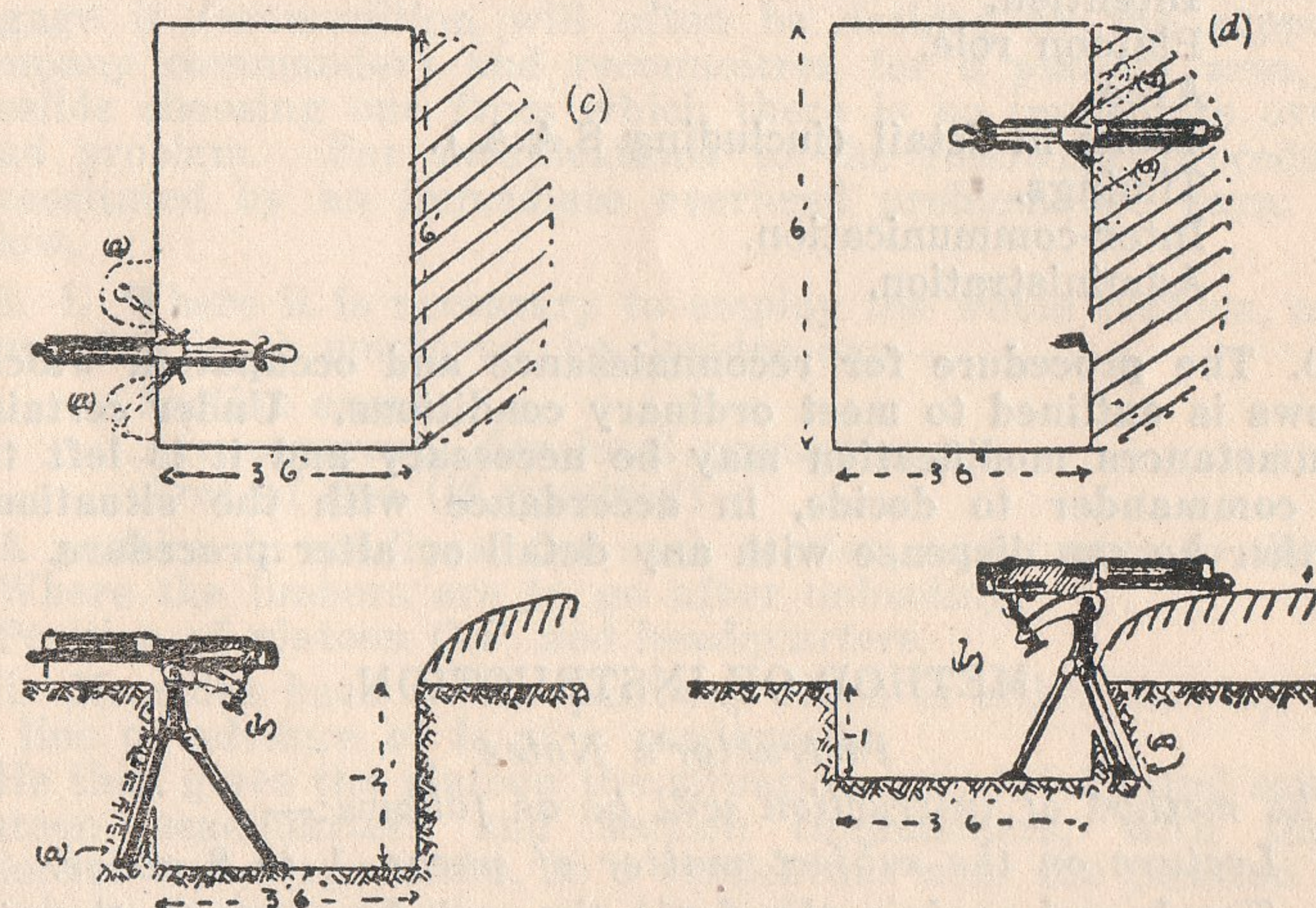
Entrenching may be a danger if obvious to ground or air observation. Care must be taken to camouflage the work, and it should not be obvious in an air photograph.

The diagrams in Plate 15 are given as a guide. The type of trench finally developed should be similar to, and viewed from the air should be indistinguishable from, the normal rifle or L.M.G. gun slits.

PLATE 15

HASTY M.G. EMPLACEMENTS OF RIFLE SLIT TYPE

(See Sec. 22.)



Sketch No. 1

Sketch No. 2

- (a) Slight undercut, can be revetted with wooden slats from Ammunition Box.
- (b) Gun mounted in highest position.
Emplacement No. 1—2 men—time 1½ hours } approximate.
Emplacement No. 2—2 men—time 40 mins.
- (c) Crest line of parapet may be carried round trench on exposed flank.
- (d) Crest line of parapet may be carried round trench on exposed flank.

(See also Manual of Field Engineering, Vol. I (All Arms).)

9. Preliminary arrangements by the company commander.

i. Machine gun fire will normally be required as part of an organised fire plan.

ii. To ensure that in any fire plan in which machine gun fire is to be used, there is no delay in preparations for the production of fire, certain preliminary arrangements by the company commander will have to be made and in the following sequence.

- (a) Initial orders for the distribution and, where necessary, the movement of platoons.
- (b) Preliminary order from the company commander when action is likely to be imminent. This order will contain instructions for the platoon commander (or commanders) to join him and for any special movement to rendezvous by platoons under the platoon sergeant. The preliminary order will contain sufficient information to enable platoon commanders to carry out any preliminary reconnaissance before receiving orders.
- (c) After receiving requirements from the unit commander and after necessary reconnaissance, orders to platoon commanders, which will include the following:—

Information.

Intention.

Platoon role.

Area.

Tasks in detail (including S.A.A.).

Timings.

Inter-communication.

Administration.

10. The procedure for reconnaissance and occupation which follows is outlined to meet ordinary conditions. Under certain circumstances modification may be necessary and it is left to the commander to decide, in accordance with the situation, whether he can dispense with any detail or alter procedure.

METHOD OF INSTRUCTION.

Instructor's Notes

The method of instruction will be as follows:—

1. *Lecture on the subject matter of paras. 1 to 8 above.*
2. *Teach and explain the duties in each lesson with the aid of a prepared sand table.*
3. *Headquarters training exercises on the ground or sand table with the personnel required for any particular phase.*
4. *The duties of all commanders will be further practised in section and platoon training exercises, where all personnel and equipment are present. Technical as well as tactical problems should be included in these exercises.*

LESSON 90.—OCCUPATION OF A POSITION—DAY.

The Platoon Commander.

1. The platoon commander either—

- (a) Goes ahead to maintain touch with the situation, with a view to engaging targets as required; or
- (b) Goes ahead to reconnoitre an area in which he has been ordered to occupy a position.

In case (a) he details a line of advance for the platoon which will bring it forward through successive bounds.

In case (b) he details a covered line of advance and a rendezvous.

In both cases, before leaving, he should give information as to the role of the platoon and his own movements, and issue any instructions which, from his knowledge of the ground or previous reconnaissance, may assist the platoon sergeant during the forward movement.

The platoon commander should be accompanied by his orderly.

2. When the decision is made to occupy a position, the platoon commander ascertains the position of our own troops and the nature and extent of the target. He decides on the number of guns and the amount of ammunition required to engage it (ammunition will often be decided by the support company commander) and reconnoitres for a platoon area, if possible choosing one from which there is no immediate overhead problem. For modifications to the following procedure necessitated by an immediate overhead problem see para. 11 below.

3. i. Where it is necessary to employ the whole platoon, and direct fire is to be employed, he decides on:—

Section areas.

Arrangements for local protection.

Arcs of fire (if required).

A position in readiness for each section, and routes to them.

Where the limbers are to go after unloading.

Position of platoon O.P. and headquarters.

ii. He rides back to the platoon, which is either moving on its line of advance or is at a rendezvous.

He then gives the platoon the situation very briefly and sends platoon headquarters and section commanders, with their orderlies and rangetakers, to a rendezvous near the position at which he intends to give out his orders.

He gives orders to the section corporals which include:—

The position in readiness for each section and the routes to them.

The amount of ammunition required at the guns.

The position to which the limbers are to go after unloading.

NOTE.—Time may be saved if the platoon commander, before starting on his reconnaissance sends a message to the platoon sergeant indicating:—

A forward platoon rendezvous.

His own movements, and if possible a rendezvous for platoon headquarters and section commanders.

Having completed his reconnaissance, he then rides back to the platoon and gives orders to the section corporals as above.

iii. He then goes to the position to which he has sent the platoon sergeant and gives orders as under:—

To the platoon sergeant and section commanders.

Information.

Intention.

First target and/or arcs of fire.

Section areas.

Positions in readiness.

When fire will be opened.

Arrangements for local protection.

Factors affecting safety.

Ammunition allotted.

Position of limbers under cover.

Positions of platoon headquarters and company headquarters.

(Section commanders, with their orderlies and rangetakers, now move to their respective areas.)

To platoon sergeant.—Orders for establishing platoon headquarters, for local protection and siting of the anti-tank rifles.

Position of platoon O.P.

To observer.—Any special orders for watching and locating the enemy or own troops. (No observer with horsed cavalry.)

In exceptional circumstances, for example when it is necessary to rush guns up to a position, an adaption of "mounted action" described in Lesson 94 might be employed. (This sub-para. is not applicable to horsed cavalry.)

4. When both sections have been reported in action, the platoon commander sends his orderly to company headquarters to report the platoon in action.

5. Modifications for Horsed Cavalry.

The platoon sergeant.—

Duties on decision to occupy a position.—Having detailed a troop rendezvous, the troop leader may either (a) order the whole troop to the rendezvous under the troop sergeant and go forward himself with his orderly to reconnoitre, or (b) take forward his section leaders with him on his reconnaissance, the remainder of the troop proceeding to the rendezvous under the troop sergeant.

In case (b) he will usually give orders to his section leaders first, subsequently returning to the rendezvous to give the necessary orders to the section corporals.

6. He moves the platoon forward in accordance with the orders received from the platoon commander. During movement and at the rendezvous he is responsible for:—

Knowing the movements of, and watching for signals from, the platoon commander.

Local protection.

Use of ground for cover.

Formation of platoon.

Movement and position of limbers.

Action in case of surprise.

When it is necessary to move the limbers by a route other than that of the platoon, he should detail a N.C.O. to accompany them. The latter should be told the route, time to start, pace of movement and where he is to rejoin the platoon (pointed out if possible). (This sub-para. is not applicable to horsed cavalry.)

7. During the actual occupation of a position, the platoon sergeant carries out the orders of the platoon commander in regard to establishing platoon headquarters, posting scouts for local protection, and siting the anti-tank rifle.

The Section Commander.

8. i. On arrival in his section area he gives orders to his rangetaker regarding:—

Arc of fire.

Points to which he requires ranges (i.e., targets and such points as will help him in solving safety problems).

Time available.

Probable position of control post.

ii. He then reconnoitres for:—

Control post.

Two gun positions.

iii. He decides on reference points and on the method he will adopt to bring the guns into action.

vi. He brings the guns into action by one of the methods given in Sec. 22, 3.

v. When the section is in action, he sends the orderly to platoon headquarters until required by the platoon commander to take a message to the section.

The section corporal.

9. i. On receipt of the platoon commander's orders he leads his section to its position in readiness.

ii. On arrival there, he orders "... belts, prepare for action," supervises the *prepare for action* and details loads.

iii. He gives the limber driver a definite point to which he will return when signalled for, and sends the limber to the position selected by the platoon commander.

iv. He leads the section forward to the section area.

v. He orders guns into action when signalled for by the section commander or orderly, and then reports to the section commander for details of arc of fire, targets, etc.

vi. He organizes the chain of supply from limber to section position, and then places himself in a forward position to keep in touch with the situation.

10. Duties during action.

i. Platoon commander.

- (a) Keeps in touch with the situation, reconnoitring where necessary.
- (b) Issues fire direction orders as required.
- (c) Reports the tactical situation and ammunition state to the company commander. He may delegate some of these duties to the platoon sergeant.

ii. Platoon sergeant.

Acts as 2nd in-command to the platoon commander, carrying out any of the above duties as required.

iii. Section commander.

- (a) Controls the fire of his section and interprets the fire direction orders of the platoon commander into fire control orders.
- (b) Locates and engages targets in his arc.
- (c) Solves safety problems as they arise, and indicates safety limits.
- (d) Makes arrangements to continue firing in case observation is at any time interrupted.

iv. Section corporal.

- (a) Supervises supply from the limber to the gun position and maintains communication between them.
- (b) Keeps touch with the situation in the section's arc of fire in case the section commander should become a casualty.

11. Modifications for an immediate overhead problem.

Before a decision can be made to occupy a position, it must be ensured that it is safe to fire from it over the heads of our own troops.

If there is any doubt, the platoon commander—

- i. Reconnoitres quickly for probable positions, direct or indirect, and decides on the most favourable for safety as regards our own troops.
- ii. Returns to the platoon or sends a message.
- iii. Orders forward a reconnaissance party, consisting of a rangetaker, orderly, observer and batman-groom to a rendezvous near the proposed position.
(In horsed cavalry, the reconnaissance party consists of a rangetaker and horseholder and the troop orderly.)
Gives platoon sergeant the situation briefly, if not already done, and orders him to move the platoon to a forward rendezvous.

- iv. Goes to rendezvous to which rangetaker, etc., have gone, and orders:—

Rangetaker—To obtain range to own troops and target.

Observer—To watch the enemy and own troops.

- v. When the necessary ranges have been obtained, the platoon commander solves the overhead problem from that part of the position which is least favourable. When firing direct, he instructs the rangetaker to rejoin his section commander.
- vi. If it is safe to fire, he carries out the necessary detailed reconnaissance for the occupation of the position, and issues orders for its occupation in the normal manner.

LESSON 91—MODIFICATIONS FOR INDIRECT FIRE.

1. Duties on decision to occupy the position.

The platoon commander.

- i. Having decided to employ indirect fire, he reconnoitres for approximate positions for the O.P. and gun positions, decides the amount of ammunition required, selects a position in readiness, and sends the orderly back to the platoon with orders as follows:—

The situation briefly.

Line of advance to position in readiness.

Platoon headquarters senior section commander, senior section corporal and one rangetaker to move forward to the platoon area. (Platoon sergeant brings up director and stand and two zero posts.)

Junior section commander to move the platoon to the position in readiness.

Amount of ammunition required.

- ii. He then completes his reconnaissance, deciding on:—

Exact positions for O.P. and platoon headquarters.

Gun positions and gun frontage.

Method to be employed.

Arrangements for local protection.

Position under cover for limbers and a point to which they will return when ordered.

- iii. On arrival of the party under the platoon sergeant, the platoon commander gives the following orders:—

To rangetaker—

1st target.

Other points to which ranges are required.

Time available and place to which to report ranges.

To observer and scouts—

As for a direct fire position.

To platoon sergeant, senior section commander and senior section corporal—

Full information.

Method of indirect fire to be employed.

Gun position and frontage and pivot gun if necessary.
Arrangements for local protection, including the siting of the anti-tank rifle.

Position under cover for limbers, and point to which they will return when ordered.

Position of O.P., platoon headquarters and company headquarters.

When fire is to be opened.

iv. The platoon commander then establishes his O.P., and makes his calculations for engaging the target.

2. Duties during the occupation.

i. The platoon sergeant.

Establishes platoon headquarters.

Arranges local protection and posts the anti-tank rifle as ordered.

When ordered by the platoon commander, sends the platoon orderly to company headquarters to report the platoon in action.

ii. The senior section commander.

Calculates minimum Q.A., supervises the guns coming into action, and carries out the duties laid down for him in platoon drill, indirect fire. Sends one section orderly to platoon headquarters and keeps the others, and the remaining rangetaker, with him at the gun position.

iii. The junior section commander.

Moves the platoon to the position in readiness, and on arrival orders "... belts—for indirect fire—prepare for action." If necessary he details loads to higher numbers.

Moves the platoon forward in rear of the gun position.

Carries out the duties laid down for him in platoon drill, indirect fire.

iv. The senior section corporal.

Sends the two section orderlies with a director, and the remaining rangetaker, forward to the senior section commander.

Assisted by the junior section corporal, sends the limbers to the position under cover and tells the drivers where to return on being ordered.

Organizes the chain of supply.

3. Duties in action.

i. The platoon commander.

Normally controls the fire of the platoon. He may delegate this duty to the platoon sergeant if he wishes to be free for other duties.

ii. The platoon sergeant.

Acts as second-in-command of the platoon, and is prepared to take over the duties of fire controller.

iii. The senior section commander.

Commands at the gun position and reports ammunition state to the platoon commander.

iv. The junior section commander.

Carries out the duties laid down for him in platoon drill, indirect fire.

v. The senior section corporal.

Assisted by the junior section corporal, supervises and controls the supply from the limbers to the gun position.

LESSON 92.—OCCUPATION OF A POSITION—NIGHT.

Duties where preliminary reconnaissance can be carried out in daylight.

1. Before occupation.

The platoon commander.

i. (a) The platoon commander proceeds to his platoon area, taking with him a reconnaissance party consisting of:—

Two section commanders with directors and pegs.

Two rangetakers.

Two orderlies.

If not otherwise required the platoon sergeant may accompany this reconnaissance in place of one of the orderlies.

(b) On arrival, he carries out his reconnaissance including the selection of gun positions.

He orders the necessary ranges to be taken.

He, and the platoon sergeant, if present, proceed to carry out the pegging of the positions (as in Sec. 26) assisted by the section commanders.

ii. He now decides on:—

(a) The type of concealment and extent of digging to be carried out.

(b) Positions in readiness for the section and a rendezvous for the platoon.

(c) The approaches from the rendezvous to the positions in readiness and to the gun positions, arranging that these routes can be recognised in the dark.

(d) The place to which limbers will proceed after unloading, if they are to remain under platoon control.

(e) Arrangements for local protection.

(f) The position of platoon headquarters.

iii. He gives the platoon sergeant and section commanders all available information regarding enemy, own troops and targets, and issues orders on the points included in sub-para. ii. above.

He leaves the rangetakers or orderlies in the platoon area to safeguard the preparations made for occupation.

iv. When the reconnaissance is completed the party, less those required to safeguard the preparations, will return to the platoon, where the platoon commander will:—

- (a) Prepare fire control charts and issue and explain them to the N.C.O.'s concerned.
- (b) Issue all available information to the platoon.

v. On occasions the reconnaissance party may have to be reduced to a minimum:—

Platoon commander.

1 Rangetaker.

1 Man with director and pegs.

In this case the platoon commander will be responsible for the pegging of both section areas.

He will issue orders as in iii. above on return to the platoon.

2. Duties on occupation of the position.

i. On arrival at the rendezvous, if the section commanders were present during the reconnaissance they lead their sections direct to the positions in readiness and come into action.

ii. If the section commanders were not present during the reconnaissance, the platoon commander takes forward one section commander to his position in readiness and points out the gun and direction pegs. He then returns to the rendezvous and leads the other section to its position in readiness and points out gun and direction pegs as for the other section.

iii. When necessary he orders the platoon sergeant to collect the section limbers and take them to the pre-arranged place.

3. Duties when no daylight reconnaissance is possible.

i. It is possible to arrange for fixed lines with fair accuracy at close ranges, provided that a light can be shown on the place where the fire is to fall.

The platoon commander first chooses positions for his sections by personal reconnaissance.

ii. Having given orders for the occupation of the positions he proceeds with a torch to the place or places where he requires the fire of the sections, and exposes a light in the direction of the guns. (For technical procedure, see Lesson 131.)

iii. A signal must be arranged to notify the platoon commander when guns have been correctly laid.

LESSON 93.—DUTIES SPECIAL TO DEFENCE.

1. Duties on decision to occupy a position.

In addition to the points already given in Lesson 90, para. 3, ii., the platoon commander will include in his orders:—

- (a) The position of our own troops in the vicinity of section areas and arcs of fire.
- (b) Temporary areas in which fixed lines are to fall.
- (c) Signal for defensive fire and rates of fire on fixed lines.

- (d) Any special orders for local protection and concealment.
- (e) Orders regarding digging.
- (f) Intercommunication.
- (g) In the case of supporting guns, who will give order for switch to penetration task, and how order will be given (if known at the time).

2. Duties during the occupation.

i. The platoon commander.—

- (a) Having given his orders, he will ascertain from rifle units near his gun positions and in the area where his defensive fire is required to fall, the exact dispositions of their troops, so as to ensure necessary safety. He will also ascertain the positions from which the signal for defensive fire will be sent up.
- (b) In the case of supporting guns, he interviews the officer responsible for giving the order for a switch to the penetration task, and finalises details.
- (c) He returns to the section positions and gives orders in detail as to fixed lines, the positions from which the signal for defensive fire will be sent up, and any other points in para. 1 above, not already sufficiently dealt with.
- (d) He then visits nearby rifle company commanders and arranges to keep in touch with them.
- (e) As soon as he receives messages from his sections that they are in action, he reports his platoon in action to his company commander.

ii. The platoon sergeant.—

Having established platoon headquarters and arranged for local protection (including the siting of the A/Tk rifle), he goes back with the horses of the platoon headquarters, takes over the limbers from the section corporals, and moves the whole as ordered.

He will then return to platoon headquarters and obtain full information from the platoon commander.

iii. The section commander of each section.—

On arrival in his section area, in addition to his duties given in Lesson 90, para. 6,

- (a) Orders the rangetaker to construct a range card for the arc, naming the points to which he requires ranges.
- (b) Orders the guns to be mounted to cover the arc.
- (c) Immediately he receives details of the fixed line, has the guns laid on this line (Lesson 129, 130).

Note.—Where guns have a forward task in addition they will be laid initially on the forward fixed line and arrangements made for the switch from forward to penetration fixed line.

Posts sentries.

- (d) Arranges for the concealment of the position and stores.

- (e) Organises digging.
- (f) Orders the section corporal to take the limber to the position ordered.
- (g) Sends the section orderly to platoon headquarters to report section in action.
- (h) Informs all ranks of the signal for defensive fire, the action to be taken in case of alarm, the position of temporary alarm post, and the details of ranges.
- (i) Selects permanent alarm posts, makes out the duty roster.
- (j) Marks in on his range card the area within his arc in which it is safe to fire.

He will take the earliest opportunity of visiting infantry posts near his area.

Note.—Throughout the occupation of the position and whilst in action the section commander will—

Ensure that any information regarding enemy, own troops, etc., received is immediately passed on to all ranks of his section.

iv. The section corporal of each section.—

- (a) Ensures that all stores are removed from the limber, taken forward and placed under cover near the gun position.
- (b) When ordered by the section commander moves the limber to the position ordered and hands it over to the platoon sergeant.
- (c) Reconnoitres for a supply of water.
- (d) Reports to the section commander for full information and informs him of the result of his reconnaissance for water.

3. Reserve guns.

Reserve gun platoon commanders, if ordered to support a counter-attack, will get in touch with the rifle company commander concerned.

All reserve gun platoon commanders will arrange for reconnaissance of positions to protect reserve localities.

Until it becomes necessary to occupy a position, reserve guns will remain on their transport.

LESSON 94.—DUTIES SPECIAL TO WITHDRAWAL.

1. The occupation of a position under conditions of withdrawal.

i. The normal duties for occupation of a position in defence will be carried out, but special consideration will be given to readiness for movement and to facilities for quick and covered withdrawal.

ii. Provision must be made for bringing limbers as close up as possible, consistent with safety, to section positions when the guns are ordered out of action. A platoon commander will normally choose these forward positions for the limbers and

notify them in orders to section commanders and corporals, but on occasions the selection may rest with section commanders, who will themselves inform their section corporals.

2. Preparation for withdrawal to a new position.

i. The platoon commander.—

Previous to the withdrawal he will reconnoitre the route to be followed. He may delegate this duty to his platoon sergeant and may also instruct the latter to reconnoitre the new position. During the reconnaissance of the route of withdrawal any likely intermediate fire positions will be noted.

He will issue verbally, or by orderly, preliminary orders which will lay down:—

- (a) Line or lines of retirement.
- (b) A platoon rendezvous in rear of the first position or section rendezvous on the new position.
- (c) How the order to withdraw will be given (personally, in verbal or written message or by signal).
- (d) The line of withdrawal of platoon headquarters.
- (e) A reconnaissance plan for the new position.

If the situation is such that he can decide on the following points at this time, he will also include:—

- (f) Orders as to which section will withdraw first in the case where both sections are not to withdraw together.
- (g) Instructions as to whether the withdrawal is to be carried out mounted, and if so a rendezvous for the higher numbers. (Infantry only.)
- (h) Any instructions as to keeping touch with himself during withdrawal.

ii. The section commander.

He is responsible for reconnaissance of the route from his section position to the platoon rendezvous or to his section rendezvous on the new position. He may delegate this task to his section corporal.

3. Reconnaissance of a new position.

i. When it is required to send a reconnaissance party back to repare a new position, the following personnel, as a minimum can undertake the duties:—

Platoon sergeant.

1 Rangetaker.

2 Gun numbers.

ii. The platoon sergeant—accompanied by the minimum reconnaissance party.

- (a) In accordance with the orders he has received and after reconnaissance of the ground will select section areas, gun positions and positions in readiness and a platoon control post.

- (b) Will point out the arcs of fire of the sections and reference points within these arcs to the rangetaker, who will take the necessary ranges and prepare range cards for both sections.
- (c) Will point out the section gun positions, arcs of fire and positions in readiness to the 2 gun numbers, who will act as section guides. The guides will then be posted on the line of withdrawal of the platoon, or if the sections are withdrawing independently, at section rendezvous, from where they will lead the sections to their respective areas.
On arrival in these areas the guides will there give the section commanders all known information about the section positions.
- (d) Will remain on the new position, meeting the platoon commander on the latter's arrival there, and reporting fully about it and the situation as known. The platoon commander will in turn communicate that information to the section commanders.

4. Withdrawal to the new position.

i. The platoon commander.—

- (a) Will give personally or send the order to withdraw, including any of the points in para. 2, i, above, which he has not previously given.
- (b) Will control the movement of the sections from the platoon rendezvous or, if the sections move independently to the new position, keep touch with their progress.

ii. The section commander.—

- (a) On receipt of the order to withdraw will order "Cease firing"—and, having signalled to the limber to come up to its forward position, "on limber."
- (b) When all stores are on the limber will lead the section back by the selected route to the platoon rendezvous or to the section rendezvous.

iii. The section corporal.—

Will be responsible for sending the limber forward when signalled up by the section commander. He will then assist the latter in controlling the "On limber" action.

5. The withdrawal mounted (infantry).

If the platoon commander wishes either or both sections to withdraw mounted, he will first order "Prepare to move mounted," followed by "Move." In this case the section or sections will act as follows:—

"Prepare to move mounted."

i. The section commander.—

Signals for the limber, sends back the rangetaker or orderly

as required, informs the section corporal the amount of ammunition he requires left at the gun position, and ensures that he has final orders.

ii. The section corporal.—

Orders limber to the prearranged position, turns it round and assists the spare numbers to take off the cover, take out the gun chests and lay them on the ground. He orders them to take up to the position whatever ammunition is required.

Having seen the stores in the limber squared off, he then falls in the whole section, except Nos. 1 and 2 of each gun, and the orderly or rangetaker, and marches them back to the rendezvous. He details a fresh No. 1 and No. 2 to take over as soon as the guns arrive back.

"Move."

The section commander assists Nos. 1 and 2, and the section orderly or rangetaker (if not required to hold the platoon commander's horse), to get the stores on the limber and replace the cover. Then all mount on the limber and retire to the rendezvous at whatever pace the situation demands.

The platoon commander will on all occasions be the last to leave the platoon position.

APPENDIX I.

SPOTLIGHT APPARATUS FOR TRAINING M.G. PERSONNEL.

After the apparatus has been correctly assembled to the gun, and all connections made (see sketch in box), the following is the procedure:—

Focusing.—Telescopic focus from the rear end of the spotlight projector.

Harmonising.—The light must be harmonised with the tangent sight and this is done as follows:—

Set the spotlight sight (converted Lewis gun sight) and the tangent sight to the same range, e.g., 1,500 yards. Lay the gun on a good aiming mark and bring the light on to it by making vertical adjustments by means of the thumbscrew on the projector, and lateral adjustments by means of the clamping screw UNDERNEATH the projector sight. Extreme accuracy is required in making these adjustments.

The apparatus is now ready for use.

The apparatus can be used for teaching N.C.O.'s and men, and exercising them in indication and recognition, and for demonstrating fire orders, and exercising men in interpreting fire orders, using combined sights and making corrections for wind.

In demonstrating fire orders it is necessary that the light should be controlled from the thumbpiece switch in conjunction with the vibrator, this is done quite easily by connecting the wiring up a different way.

On the fire order being given the gun numbers carry out their duties in the normal way. In order to maintain the harmonisation of the light with the tangent sight, it is necessary for the instructor or an assistant to adjust the projector sight to correspond with the tangent sight.

Example.—The order is given, "All 1,400."

No. 1 sets the tangent sight to 1,400 yards.

The instructor or assistant sets the projector sights to 1,400 yards.

In the case of combined sights—

The order is given—"No. 1, 1,550; No. 2, 1,650."

Nos. 1 set their tangent sights as ordered.

The instructor or assistant sets the projector sights at 1,600 yards, i.e., the correct range.

This will have the effect on the target of one gun being slightly high, and the other being slightly low, and on opening fire the rings of light will have the appearance of overlapping beaten zones. It is here that the necessity for extreme accuracy in harmonising is seen.

In teaching or exercising men in fire orders it is necessary that the light should be controlled independently of the thumbpiece switch. Hence the press switch which is controlled by

the instructor. This is necessary for the following reason:—

Instead of the No. 1 carrying out his duties as taught, occasionally checking his aim between bursts, traversing correctly 15 minutes, relaying on the command "STOP," etc., he would allow himself to be guided by the light. Whereas if the instructor controls the light, he can produce as necessary for the purpose of checking the actions of the No. 1.

Making correction for wind.

On the upper side of the clamping plate of the projector sight will be seen a series of graduations. These are for making or checking corrections for wind. The graduations are of 15 minutes, and are adjusted by means of the small milled head screw at the side. Normally this scale must be kept at zero.

On the wind correction being ordered, the No. 1 makes his adjustment by tapping his gun. The instructor or his assistant adjusts the projector sight the amount ordered. On opening fire the light should now still fall on the target, showing whether the man's adjustment is correct or otherwise. On completion of the fire order care must be taken to re-zero the wind scale.

The vibrator should be used to teach the correct length of burst according to the range, and later as a check on the man in doing so.

In using the apparatus the following suggestions are made:—

1. Service guns should be used to eliminate as far as possible any play between the gun and the tripod.

2. As the apparatus will normally be used indoors, a "T" base or sandbags should be used to allow the traversing clamp to be correctly adjusted by the No. 1.

3. Guns must be placed as close together as possible, otherwise, as the guns are switched about over the landscape target, the light will tend to go out of focus, and errors will creep into the harmonisation.

APPENDIX II. PACKSADDLERY.

General Remarks.

1. It is desirable that animals for machine gun packsaddlery purposes should be carefully selected. Those with abnormally broad hips, or with the points of the hips very prominent, should not be chosen.

2. There are two methods of carriage on packsaddles for this machine gun:—

(a) When used with cavalry.

(b) When used with infantry.

In both methods the sets of packsaddlery comprise certain articles of general service packsaddlery, supplemented by other articles of machine gun packsaddlery, either common to both methods of carriage, or special to either.

3. The composition of cavalry or infantry sets are as shown in the tables which follow; those for infantry show the requirements when all the equipment is carried on pack, as also when the normal method of carriage is in limbered wagons with a certain percentage of packsaddlery for emergency carriage.

4. A description of the articles comprising the several sets, as also instructions for assembling and loading, are given.

DETAIL OF CAVALRY SETS.

Description	Number of each		
	Gun Set	1st Ammuni- tion Set	2nd Ammuni- tion Set
Section J.			
Ropes, head, hemp, Mark IV.	1	1	1
Section D. 1.			
Bits, bridoon, P.G.S.	1	1	1
Breechings, P.G.S., Mark V.	1	1	1
Caps, shovel, Mark II.*	—	2	2
Carriers, water can and condenser	—	1	—
Cases, horseshoe, P.M.G., modified	1	1	1
Collars, breast, P.G.S., Mark V.	1	1	1
Collars, head, P.G.S., Mark IV.	1	1	1
Cruppers, P.G.S., Mark V.	1	1	1
Girths, P.G.S., Mark V.	2	2	2
Girths, leather	—	1	1
Hangers, gun, sling, cavalry	1	—	—
Hangers, tripod, sling, cavalry	1	—	—
Pannels, P.G.S., Mark V. pairs	1	1	1
Racks, boxes, belt, ammunition, cavalry . .	—	2	2
Reins, bit, S.U.	1	1	1
Slings, ammunition, belt boxes, cavalry . .	1	—	—
Straps, detachable, shovel	—	2	2
Straps, girth, P.G.S., Mark II.	4	4	4
Straps, pick and helve	—	—	2
Straps, suspending, shoecase	1	—	1
Trees, P.M.G., cavalry, Mark II.	1	1	1
Rests, Mark II.	1	—	—

DETAIL OF INFANTRY SETS.

(For Infantry whose equipment is carried wholly on pack.)

Description	Number for each	
	Gun and Tripod Set	Ammuni- tion Set
Section D1		
Bands, belly, P.M.G.	1	—
Bands, belly, P.M.G. straps, long	1	—
Bands, belly, P.M.G. straps, short	1	—
Bands, belly, P.M.G. straps, supporting	2	—
Bits, bridoon, P.G.S.	1	1
Breechings, P.G.S., Mk. V.	1	1
Caps, shovel, Mk. II.*	1	—
Cases, horseshoe, P.G.S.	1	1
Chains, collar	1	1
Collars, breast, P.G.S. Mk. V.	1	1
Collars, head, P.G.S. Mk. IV.	1	1
Cruppers, P.G.S. Mk. V.	1	1
Girths, P.G.S. Mk. V.	2	2
Girths, leather	—	1
Hangers, gun, sling	1	—
Hangers, tripod, sling	1	—
Pannels, P.G.S. Mk. V., pairs	1	1
Racks, boxes, belt, ammunition, infantry	1	2
Reins, bridoon, P.G.S.	1	1
Straps, girth, P.G.S. Mk. II.	4	4
Straps, pick and helve	3	—
Straps, detachable, shovel	1	—
Trees, P.G.S.	1	1

DETAIL OF INFANTRY SETS (ABBREVIATED SCALE).

(For infantry whose normal method of carriage is in limbered wagons, but who are also issued with a percentage of pack-saddlery for emergencies.)

Description	Number for each	
	Gun Set	Ammuni- tion Set
Section D1		
Bands, belly, P.M.G.	1	—
Bands, belly, P.M.G., straps, long	1	—
Bands, belly, P.M.G., straps, short	1	—
Bands, belly, P.M.G., straps, supporting	2	—
Breechings, P.G.S., Mk. V.	1	1
Caps, shovel, Mk. II.*	1	—
Cases, horseshoe, P.M.G., modified	1	1
Collars, breast, P.G.S., Mk. V.	1	1
Cruppers, P.G.S., Mk. V. (a)	1	1
Girths, leather	—	1
Girths, P.G.S., Mk. V.	2	2
Hangers, gun, sling	1	—
Hangers, tripod, sling	1	—
Pannels, P.G.S., Mk. V. pairs	1	1
Racks, boxes, belt, ammunition, infantry	—	2
Straps, detachable, shovel	1	—
Straps, girth, P.G.S., Mk. II.	4	4
Straps, pick and helve	1	—
Straps, suspending, shoecase	1	—
Surcingles, P.G.S., Mk. III.	1	1
Trees, P.G.S.	1	1

Note.—The headgear allowed for sets of harness will be used when animals are employed as pack animals.

(a) Large size for horses and medium size for mules.

DESCRIPTION.

(a) Articles common to both cavalry and infantry sets.

1. **Case, horseshoe.**—For cavalry sets, the pattern formerly used for harness purposes, modified by the removal of the link from the back and the release of the strap with the chape (the latter being reduced in width to the size of the strap) are used.

For infantry the pattern formerly used for harness purposes (unmodified) is utilised.

2. **Bit, bridoon.**—Is an ordinary bridoon bit, but tinned to prevent rust. The mouthpiece is fitted at each end with a ring to receive the iron stops on the reins when the ordinary pack-saddlery reins are used, or for universal saddlery reins to buckle to. The "T" pieces are secured to the rings by links and solid loops, and are for fitting under the leather loops on the packsaddlery head collar.

3. **Breeching, Mark V.**—Is used for preventing the pack-saddle from slipping forward. The straps buckle to the body

part of the breeching after being looped to the links on the pannels. It is supported by its hip strap, which passes through a loop on the crupper before buckling.

4. **Collar, breast, Mark V.**—Is used to prevent the load from slipping back. The straps, after passing through the links on the pannels, buckle to the body part of the breast collar. It is supported by its own neckstrap.

5. **Collar, head, Mark IV.**—Similar in design to the universal saddlery head collar, but the furniture is tinned iron, and it is fitted on the lower part of the headpiece with leather loops for the "T" of the bridoon bit to fit into, and with a ring on the noseband.

6. **Crupper, Mark V.**—Is made with forked straps, which, after being looped to the rear arch of the packsaddle, buckle to the body of the crupper. The use of the crupper is to assist in preventing the saddle slipping forward.

7. **Girths, Mark V.**—Girths are made of worsted web. They are fitted with chapes and buckles at either end to connect up with the girth straps. These girths have no connecting piece as in earlier patterns, but may be crossed when girthing up if desired.

8. **Girth, leather.**—Is a leather steadying girth, with a billet and buckle at each end. It can be lengthened by the "strap, extending."

9. **Pannels, Mark V.**—Each pannel consists of a leather back, with tan dowlas lining, the stuffing being horsehair. They are attached to the side bars by leather pockets, the front pocket having a strap and buckle for securing purposes. An opening in the outer side admits of adjustment of the stuffing.

Pannels are fitted with links to take the straps of the Mark V breast collar or breeching—the hooks attached to such links are intended for the chains of earlier marks.

The stuffing can be adjusted as required and kept in position by additional spot stitches if necessary.

10. **Straps, girth, Mark II.**—Are for buckling the packsaddle girth to. They are of leather, and made with a loop at one end.

11. **Cap, shovel, Mark II.**—Is a leather cap, made to fit on the pan of the G.S. shovel. It has a detachable strap (apart from the "Strap, shovel," which do not form part of the cap), which is used for securing it.

12. **Straps, pick and helve; shovel.**—Are for use with the articles shown in the "Details of Sets" applicable to the arm (cavalry or infantry) concerned.

The "Straps, pick and helve," are for suspending the articles in question as part of the load.

The "Strap, shovel," retains the handle of the shovel against the rear arch of the packsaddle.

(b) Articles special to cavalry sets.

13. **Carrier, water can and condenser.**—Consists of:—A leather tray with V-shape straps and quick-release attachment, two buckles and straps at back, two straps with quick-release attachments and ring on front.

14. **Hangers, gun, sling, cavalry.**—Consist of:—

- i. A front suspending pad with strapping, fitted at one end with a ring to attach to the near front hook of the packsaddle, and at the other end with a buckle to connect up with the V-sling attachment alluded to at (iii).
- ii. A rear suspending pad with strapping, fitted similarly to the pad at (i). This rear pad, however, differs in shape, and is much thicker in substance for the greater part.
- iii. A V-sling attachment, consisting of two straps, each carrying a sliding cranked link, with eye, and sewn to a triangular roller buckle. The ends of these straps connect to the buckles of the front and rear suspending pads.

This attachment is interchangeable with that used for the tripod hanger.

15. **Hanger, tripod, sling, cavalry.**—Is similar in principle to the gun hanger, but differs in the following respects as regards details:—

- i. There is a front suspending strap instead of a "pad with strapping." This strap is, however, similarly fitted with ring and buckle, as in the case of the pad.
- ii. The rear suspending pad, with strapping, is of equal substance throughout, and the strapping shorter than that of the gun hanger, or the front suspending strap of the tripod hanger.
- iii. The strap to connect with the triangular buckle is detachable, whereas in the gun hanger it forms part of the gun rest.

16. **Rack, boxes, belt, ammunition, cavalry.**—This is a canvas rack strengthened with leather, the body of which is attached directly to a wood bottom. Wire rope slings are provided for suspension purposes which are spliced round metal thimbles attached to eyebolts, which pass down through the wood bottom and metal plate and are riveted over the nuts.

A wood bearing bar is riveted across the centre of the back to prevent friction on the canvas.

The rack is divided into three compartments, each of which holds one box of ammunition in belt, i.e., 750 rounds in all.

17. **Sling, ammunition belt, boxes, cavalry.**—This is a leather cradle, fitted with rings to hook to the off-side of the pack-saddle, and with buckles for securing the box; also with adjustment for variation in size of belt boxes.

18. **Strap, suspending, shoe-case.**—The "Strap, suspending, shoe-case" is an additional strap for the suspension of the "Case, horseshoe, modified," between the arches of the packsaddle.

19. **Tree, P.M.G., cavalry, Mark II.**—The principle of the ordinary general service adjustable tree is retained, but the alterations and additions as under are made:—

- i. Extension pieces project beyond the arches, to which are bolted leather-covered brackets to carry the spare barrel in its case, or the pick and helve.
- ii. A connecting bar of $\frac{1}{2}$ -in. steel rod, shouldered in the centre for the extension portion of the gun rest, is fitted between the arches, passing through both the flange of the extension pieces and the web of the angle of the arches before riveting.
- iii. A gun rest, with extension to the connecting rod, is added. This gun rest is shaped, covered with leather, and fitted with a strap to connect with the V-sling attachment of the gun hanger.

Note.—The tree of the gun rest is fitted with this rest when issued, but two additional gun rests with extension and strapping are issued with each complete gun equipment, ready for fitting regimentally to either of the trees on the ammunition horses, if circumstances should necessitate the employment of either of those trees for carriage of the gun.

20. **Reins, bit.**—These are of the universal saddlery pattern, and are only issuable for Cavalry Machine Gun Squadrons.

(c) Articles Special to Infantry Sets.

21. **Trees, P.G.S.**—Consists of two steel arches (to which rigid hanging hooks are riveted) connected by sidebars made from padouk or sabicu wood.

The arches are jointed to the side-bars to admit of them turning automatically, thus allowing of adjustment to the backs of large or small animals, or to meet loss of condition, and to obviate the necessity of several sizes.

The side-bars are slotted for the girth straps to loop on.

22. **Bands, belly.**—These belly bands are broad leather girths 52½ in. in length by 3 in. in width, fitted at either end with a buckle and fixed leather loop to connect with the "Straps, long" and "Straps, short," which follow.

23. **Straps, long (or straps, short).**—Are straps fitted at one end with a fixed leather loop. The long strap is 48 in. by 1½ in., and the short 40 in. by 1½ in.

24. **Straps, supporting.**—These are narrow straps, 13 in. by ¾ in., which prevent the belly band dropping to the ground when the above-mentioned long and short straps are unbuckled to release the load.

25. **Chains, collar, P.G.S.**—Are used for infantry in place of the headrope. It consists of a length of chain with a bent "eye" link at one end, and a "T" piece at the other. It is also fitted with two cross aperture links for the "T" to pass through as required.

26. Hanger, tripod, sling.—Is designed so that the tripod may be slung in it to the hooks of the packsaddle.

It consists of a wood bearing bar, added to at the rear end by a wood block which keeps the tripod away from the animal's hip. Leather slings, felt lined, are attached to the bearing bar, the front sling being wider and longer than that at the rear. Both slings are fitted at either end with metal dees for hooking to the packsaddle, and the upper dees are provided with strap and buckle for securing both dees after the tripod is slung.

27. Hanger, gun, sling.—Is constructed on the same principle as the tripod hanger, but is intended for the carriage of the gun. It differs from the tripod hanger in the following respects:—

The bearing bar is added to at either end by wood blocks which extend below it, and keep the gun sufficiently away from the side of the animal.

Both slings are of similar width.

A leather chape carrying a metal square is screwed to the centre of the bearing bar on the upper side for the "girth, leather," to buckle to when required.

28. Racks, boxes, belt, ammunition, infantry.—Consist of a canvas body with wood bottom and rope slings. The body is bound with leather at the lower edge as also at the four upper corners, and is attached directly to the wood bottom at its outside edges. No partitions are arranged, but a shaped metal plate is inserted at each corner in order to strengthen them and define the shape at the top.

The rack is suspended by a rope sling at either end, which passes under the bottom and outside the ends. A metal square is attached to the wood bottom for the leather girth to attach to, and holes are made for drainage purposes.

29. Reins, bridoon.—The rein is made from Preller leather. It is fitted at each end with a tinned iron stop to connect with the rings of the bit.

TO ASSEMBLE THE PARTS.

(a) General Instructions.

Note.—The front arch of the packsaddle tree is narrower than the hind arch.

1. Packsaddle.—The tree is the frame of the packsaddle. The pannels are attached to the tree by means of front and rear pockets, into which the side-bars are inserted. The front pockets are fitted with buckles and straps for securing purposes.

The girth straps are looped to the side-bars over the upper edge, through the slots cut for the purpose.

The girths are buckled to the girth straps on the offside in readiness for use.

The crupper straps are looped to the rear arch of the packsaddle and then buckled to the body of the crupper.

2. Bit, bridoon.—The bridoon bit at one end may be passed through the leather loop on the offside of the head collar in readiness for "bitting" the animal.

3. Breechings: Collars, breast.—The straps of the breeching are first looped to the links on the pannels and then buckled to the body part of the breeching. The straps of the breast collar, after passing through the links of the pannels, are buckled to the body part of the breast collar.

(b) Instructions special to cavalry sets.

4. Carrier, water can and condenser.—To be carried on the packsaddle by passing the V-shape strap under the central bar, which connects the two arches, and then over the can. The two straps at the back are buckled round the brackets of front and rear arches. The rings on the two quick-release straps fit on to the near side hooks of packsaddle and underneath the rings of the ammunition rack.

5. Packsaddle.—Place the strap portion of the gun rest down through the slot in the "lay" of the near side pannel, through its own two sliding loops, then through the fixed loop on the underside of the gun rest.

6. Gun hanger.—Suspend to the hooks of the packsaddle on the near side by the rings at the back of the pads.

(Note.—The smaller of the two pads is to the front, and the leather loop above the ring on the larger (rear) pad is hooked on in addition to the ring.) A small leather "tie" should be employed to fasten the front ring of the sling to the front hook of the tree, to prevent it jolting off when the gun is taken off and the led horse is in motion.

7. Sling, ammunition, belt, boxes, cavalry.—Suspend to the hooks of the packsaddle on the offside by the rings, the girth straps being unfastened and then buckled over, the horizontal fixed straps forming the back of the sling. This prevents the sling moving.

8. Tripod hanger.—This is placed on after the sling above mentioned. It is suspended to the same hooks as the sling, but the front ring is placed behind the front ring of the sling, this method preventing any possibility of the rings jolting off when the tripod is taken off, and the pack horse has to move away rapidly. *(Note.*—There is only one pad with the tripod hanger, and this is at the rear. A small leather tie should be employed to fasten the rear ring of the hanger to the rear hook of the tree.) The detachable strap is looped to the slot in the "lay" of the off panel, and then placed through the triangular buckle of the V-sling attachment.

9. Detachable straps for shovel.—Loop to the links of the pannels of the first and second ammunition packsaddles.

10. Straps, suspending, shoe case.—Place through the fold of the shoe case ready for attaching to the arch of the packsaddle.

(c) Instructions special to infantry sets.

11. **Bands, belly, straps, long.**—To be looped to the bearing bar of the gun hanger on the gun set, and the tripod hanger on the tripod set, by passing up behind the bearing bars of the respective hangers, and then through their own fixed loops, the loops remaining at the upper edge of the bearing bars.

12. **Bands, belly, straps, short.**—To be looped to the nearside bar of the adjustable tree on the gun set, and the offside bar of the adjustable tree on the tripod set, in a similar manner to that for the long strap, but the loops are to remain at the lower edge of the side bars.

13. **Bands, belly, straps, supporting.**—To be looped up through the slot in the "lay" of the pannel on either side of gun or tripod sets.

The belly band is afterwards buckled to these straps, and is supported by them whenever it is released from its long and short straps; it would otherwise drop to the ground.

14. **Straps, pick and helve.**—Looped to the bearing bar of the tripod hanger by passing down behind the bearing bar, and then through their own fixed loops.

15. **Straps, detachable, shovel.**—To be looped to the rear arch (near side) of the gun set, and the rear arch (offside) of the tripod set.

16. **Saddling.**—Before saddling it is essential that the animal's back should be free from dirt, and any dried sweat or matted hair brushed out. The pannels should be thoroughly dried, beaten and freed from any dirt or grit before being placed on the animal's back. Neglect of these precautions is the most fertile source of sore backs. Constant attention must be paid to the stuffing of the pannels, and care taken to prevent them from becoming hard and lumpy.

When possible, animals should not be kept standing longer than is necessary when saddled and loaded.

If a saddle has shifted, do not try to push it into a better position; off-load, off-saddle, and re-saddle properly.

Do not allow men to hang their rifles or equipment on the loads, or hold on to them on the march.

Girths may, if wished, be crossed under the animal's belly, and this method is often useful when there is a tendency for the girths to slip. When the girths are fastened the buckles should rest on the lower edges of the pannels, as this will prevent buckle galls.

The breeching and breast collar should be so fitted that movement of the animal is not impeded. Constant rubbing of either of these articles, when fitted too tightly, will inevitably cause galls.

The crupper requires careful fitting, as otherwise the animal's dock will be galled. A good rough guide is to arrange that the breadth of the hand will pass between the body of the breeching and the body of the crupper.

The bridoon bit should hang low enough to prevent the corners of the animal's mouth from being wrinkled.

APPENDIX III.

INFANTRY MACHINE GUN PACK.

1. The pack is used as the normal method of carrying guns and equipment by machine gun platoons in countries where the nature of the ground is unsuitable for vehicles.

2. In units where the limber is the normal method of carriage, a proportion of packsaddlery equipment is available as an alternative method.

A pack saddle is carried by each of the off animals of the machine gun limber team. The remainder of the pack equipment available is carried in the rear portion of the limber. (For details of sets and description of equipment, see Appendix II.)

3. The equipment carried (in the case of machine gun units whose normal method of carriage is by limber), is only sufficient for one sub-section in each section, the remaining gear may however, be transported by improvised means on spare riding animals in an emergency.

The two leaders are used as pack animals. The near leader carries the ammunition pack and the off leader the gun and tripod pack.

There is no provision for carrying certain parts of the machine gun equipment, e.g., the rangefinder, spare parts box or the indirect or night firing stores and the amount of ammunition carried is limited. The rangetaker will carry his instrument in the canvas cover. Any additional equipment required must be carried by the gun numbers.

4. Sequence of instruction.—

The first stage is to explain to the men the details and nomenclature of the pack equipment.

The second stage is instruction in the method of packing the articles and their position on the pack saddles. It is essential that every man should know how to strip and assemble the saddles.

PROCEDURE—CHANGING FROM LIMBER TO PACK.

(For units whose normal method of carriage is by limber.)

Note.—The section will fall in in front of the limber. The instructor details which sub-section is to carry out the drill, and moves No. 5 to the rear of the limber. If Nos. 5 are not on parade, a No. 5 will be detailed from the other sub-section.

1. To prepare for pack.

Section commander.—"Prepare for pack."

No. 4 doubles forward and holds the leaders.

No. 5, after applying the brake, doubles forward and holds the wheelers. The lead driver releases the supporting straps and breast collar quick releases on the near side of each lead horse. No. 4 walks the leaders forward clear of their harness.

The lead driver dismounts and off-saddles the near leader. The wheel driver dismounts, takes the pack saddle and two feeds off the off wheel horse and puts the feeds in the rear

portion of the limber; with the assistance of the lead driver, he puts the pack saddle on the near leader, and adjusts the packsaddlery breast collar and breeching of the off leader. Both drivers then place all surplus harness in the rear portion of the limber. The lead driver then holds both leaders while they are being loaded and the wheel driver holds the wheelers.

At the same time the sub-section removes the necessary kit from the limber as follows, and lays it out on their corresponding side of the limber.

The section corporal and Nos. 1, 2 and 3 take the covers off the front and rear portions of the limber. The section corporal takes the tripod hanger out of the rear portion of the limber. No. 3 removes the gun hanger from the rear portion of the limber, and then removes the spare parts case, condenser, and case, can, oil, from the front portion of the limber.

The section corporal, assisted by No. 3, removes the two canvas racks and four double belt boxes from the rear portion of the limber. No. 1 removes the tripod and condenser tube.

No. 2, assisted by No. 1, takes out gun chest and places it on the ground.

No. 2 removes the gun and cleaning rod from the chest.

As soon as Nos. 4 and 5 are relieved by the drivers they will move back to where the stores have been laid out. No. 4 loads one rack with four single belt boxes, and No. 5 will load the other rack with two single belt boxes, condenser, can, and tube.

2. To load on pack.

Section commander.—“On pack.”

The section corporal takes forward the tripod hanger and places it on the near side of the pack saddle of the off leader.

No. 3, first removing the feed from the hook, places the gun hanger on the off side.

They then unbuckle the girth straps and rebuckle them over the wooden crossbars of both gun and tripod hangers. The girths will be crossed.

No. 3 takes the spare parts case and hangs the sling strap of the case over the two hooks on the off side of the saddle, adjusting the length of the strap, if necessary, so that the top of the case will just touch the bottom of the gun when it is in the slings.

No. 1 takes the tripod, and, with the assistance of the section corporal, places it in the near side slings, legs to the rear, crosshead leaning towards the front arch. No. 1 and the section corporal buckle the securing straps. Care must be taken that no inner jamming handle is turned back on to the leather panel of the saddle.

No. 2 takes the gun, and, with the assistance of No. 3, who takes up the cleaning rod, places it in the off side slings, muzzle to the rear, the front sling being passed over the feed block and the rear sling over the barrel casing.

Nos. 1 and 2 fix the straps, long and short, which are on

the bars of the hangers, round the tripod legs and gun respectively, and buckle them on to the steadying strap.

No. 2 buckles the securing straps.

No. 3 then takes the cleaning rod and pushes it through the gun slings, front to rear, where the metal rings are held by the leather slings.

No. 3 takes one double belt box and places it across the saddle, the ends fitting between the gun on the off side and the legs of the tripod on the near side.

No. 2 takes the feed and places it on the top of the ammunition box, securing the strap of the nosebag to the rear arch of the saddle.

The section corporal brings forward the web surcingle, and, assisted by No. 2, passes it through the metal straps of the ammunition box, over the feed, and under the belly, securing it on the near side.

No. 4 takes forward the full ammunition rack and case, cans, oil, and No. 5 the other loaded rack, together with the surcingle and canvas bucket.

No. 4 places the case, can, oil, between the arches of the saddle of the near leader, passing the strap around the arches and adjusting the length of the strap as necessary.

No. 5 places the canvas bucket between the front and rear arches of the saddle, the rope handle going under the rear arch and on the rear off side hook of the tree.

Working together, No. 5 on the near side and No. 4 on the off side hang the racks on the pack saddle hooks, the metal “D’s” on the bottom of the racks being nearest to the animal. They fasten the steadying strap (leather girth). When long enough, each end is passed through the slot in the “lay on” of the saddle, then through the metal “D” in the rack and the strap is buckled.

No. 5 fastens the other feed from the off leader on to the rear arch on the near side.

Nos. 4 and 5 pass the web surcingle round the two racks, over the condenser can and ammunition boxes, and under the animal’s belly and buckle it on to the near side.

The packs are loaded simultaneously, and when completed the lead driver will lead the ammunition pack animal and No. 5 the gun and tripod pack animal.

3. On limber from pack.

Section commander.—“Off pack.”

The driver holds both animals.

All stores will be removed from the pack saddles by those numbers who loaded them, and laid out ready to be stowed in the limbers.

Nos. 4 and 5 take over the animals as in Prepare for pack.

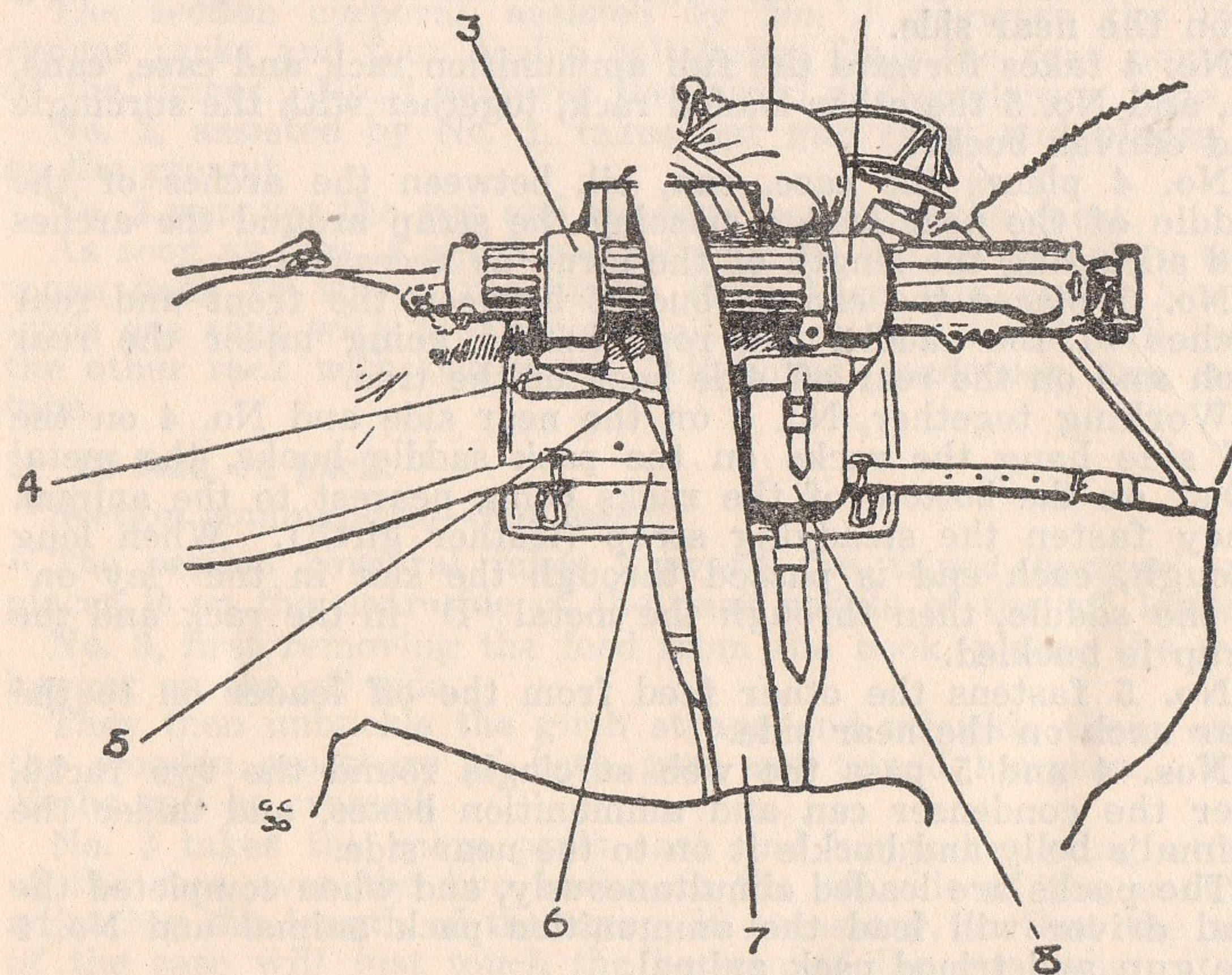
Drivers take the harness from the rear portion of the limber and replace it on the animals.

Section commander.—“On limber.”

The stores will be replaced in their correct position in the limber.

PLATE 16
INFANTRY—GUN PACK ANIMAL
Fig. 1

(Off side)

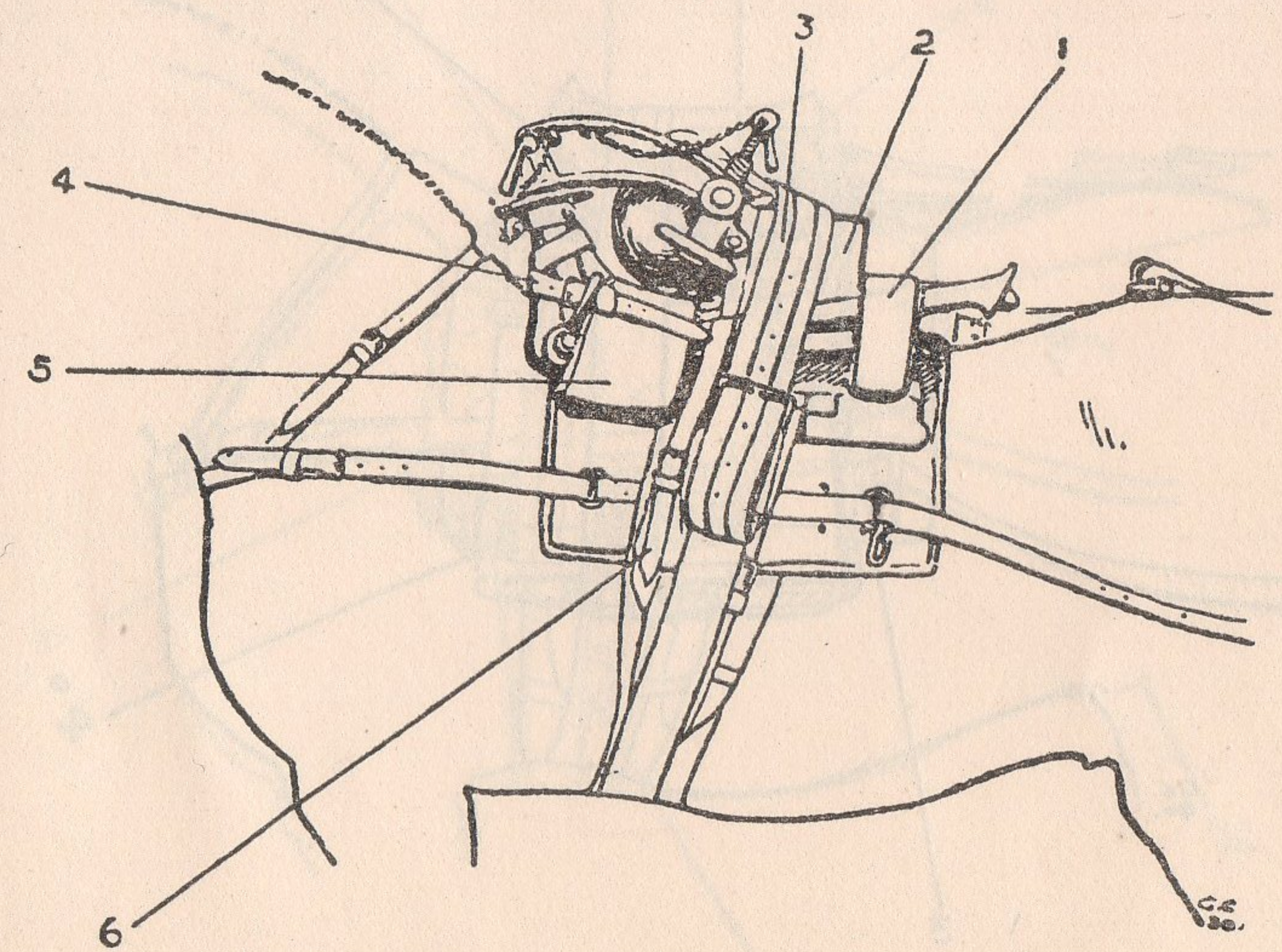


1. Front hanger sling gun.
2. Nosebag.
3. Rear hanger sling gun.
4. Hanger bar.

5. Securing strap, gun.
6. Lay on.
7. Web surcingle.
8. Spare parts case.

INFANTRY—GUN PACK ANIMAL
Fig. 2

(Near side)



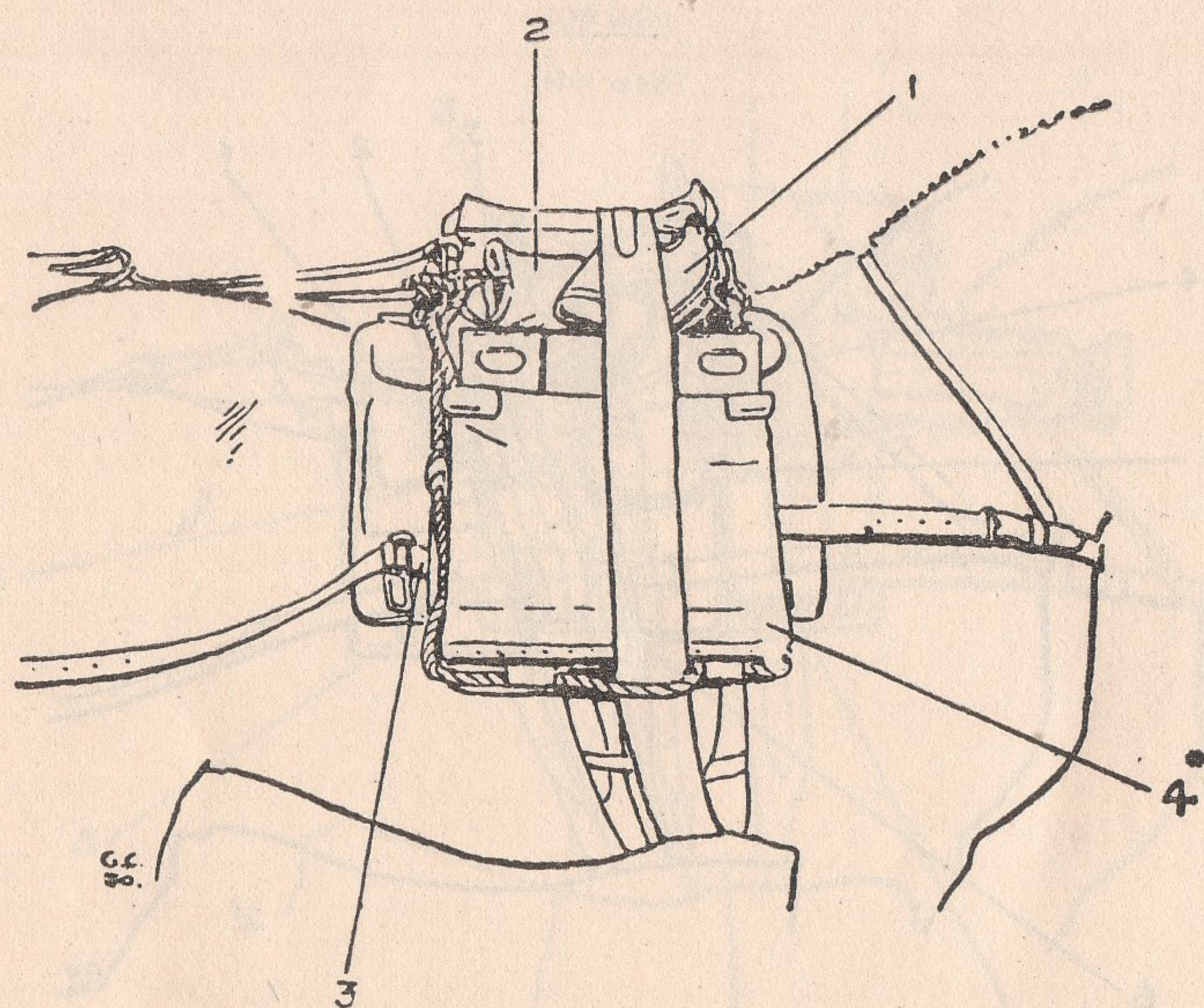
1. Rear hanger sling tripod.
2. Ammunition box.
3. Web surcingle.

4. Strap securing tripod.
5. Front hanger sling tripod.
6. Securing strap tripod legs.

INFANTRY—AMMUNITION PACK ANIMAL

Fig. 3

(Off side)



1. Case, horse shoe.
2. Canvas bucket.

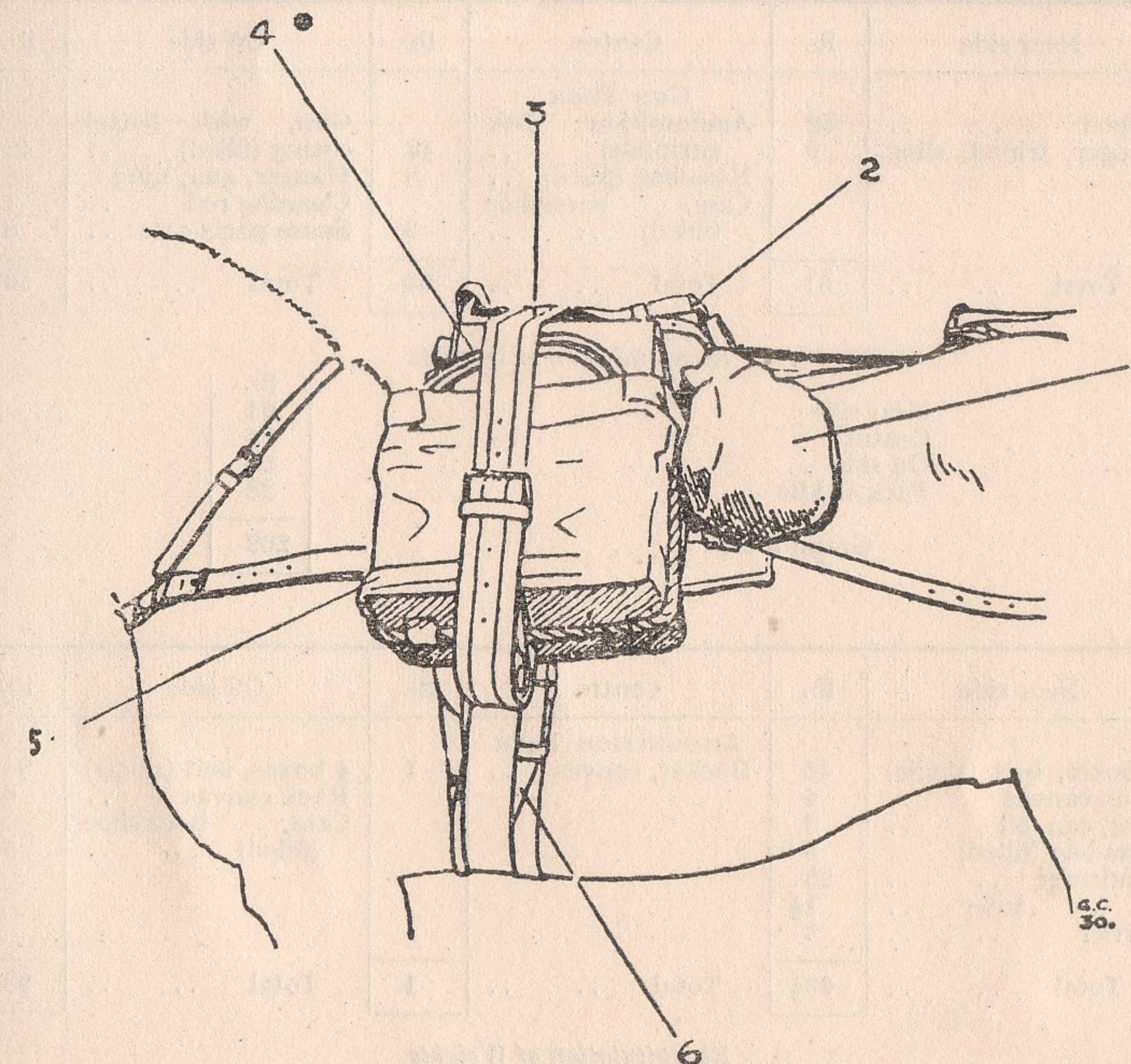
3. Lay on.
4. Canvas rack, containing ammunition boxes.

*With large size ammunition containers, three will be packed vertically instead of four, the fourth being carried in near side rack.

INFANTRY—AMMUNITION PACK ANIMAL

Fig. 4

(Near side)



1. Nosebag.
2. Cases, can, oil.
3. Surcingle.

4. Condenser, with tube.
5. Canvas rack containing ammunition boxes.
6. Steadying strap (leather girths).

*With large size ammunition containers (metal), instead of two ammunition containers being packed horizontally, these will be packed vertically and the condenser carried on top of the pack saddle.

LOAD TABLES—PACK (INFANTRY)

The following load tables should be considered as a guide, owing to the necessity of of adapting the loads to suit the local conditions :—

Near side	lb.	Centre	lb.	Off side	lb.
GUN PACK					
Tripod	52	Ammunition box (stripless) ..	43	Gun, with barrel casing (filled) ..	42
Hanger, tripod, sling	9	Nose-bag (filled) ..	8	Hanger, gun, sling	8
		Case, horseshoe (filled)	3	Cleaning rod ..	1
				Spare parts case ..	8
Total	61	Total	54	Total	59

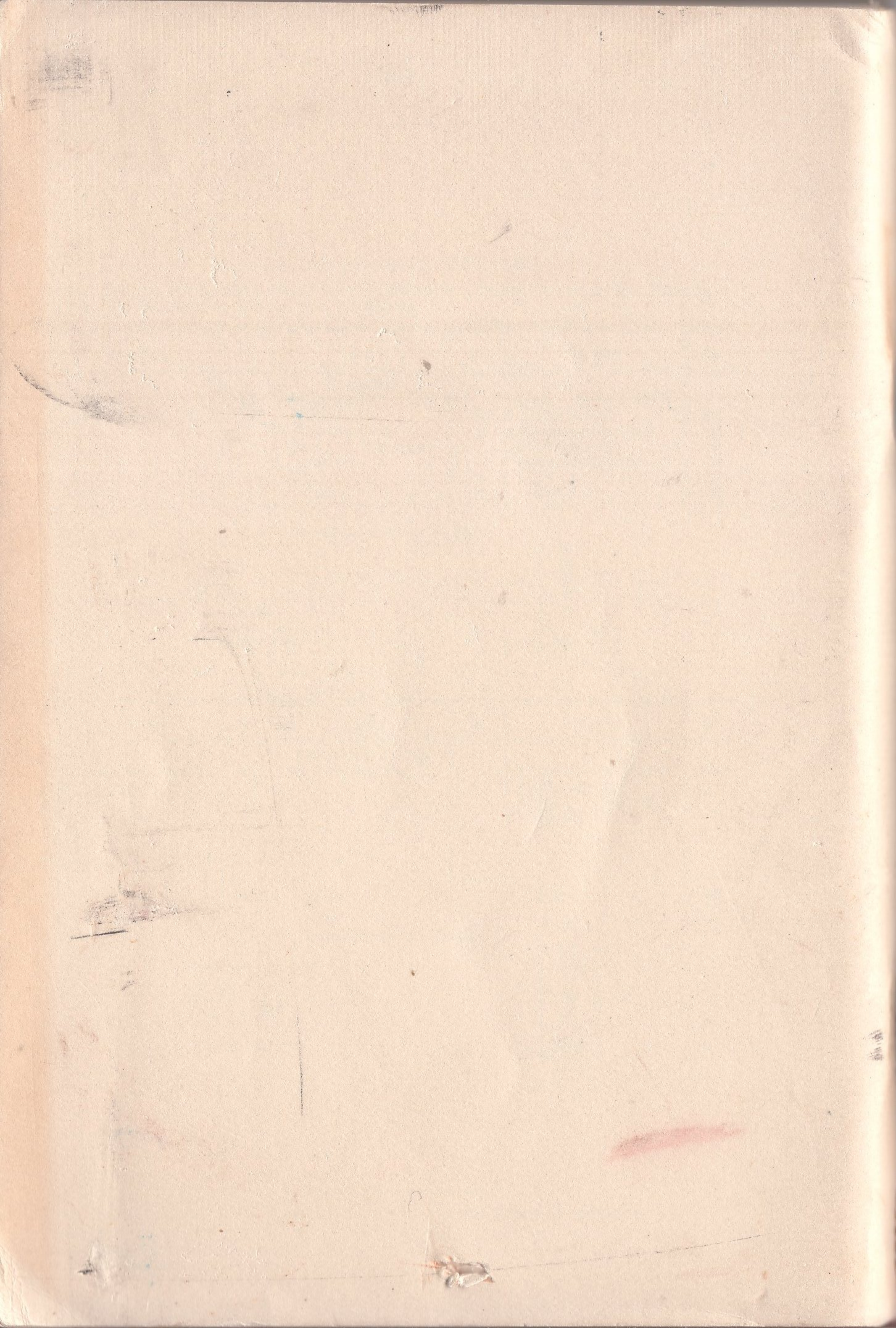
Recapitulation of Weights

Near side	lb.
Centre	61
Off side	54
Pack saddle	59
	28
Grand total	202

Near side	lb.	Centre	lb.	Off side	lb.
AMMUNITION PACK					
2 boxes, belt (single)	42	Bucket, canvas ..	1	4 boxes, belt (single)	84
Rack canvas ..	6			Rack canvas ..	6
Case, can, oil ..	8			Case, horseshoe (filled)	3
Nose-bag (filled) ..	8				
Condenser ..	25				
„ tube ..	1½				
Carrier ..	3				
Total	93½	Total	1	Total	93

Recapitulation of Weights

Near side	lb.
Centre	93½
Off side	1
Pack saddle	93
	28
Grand total	215½





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